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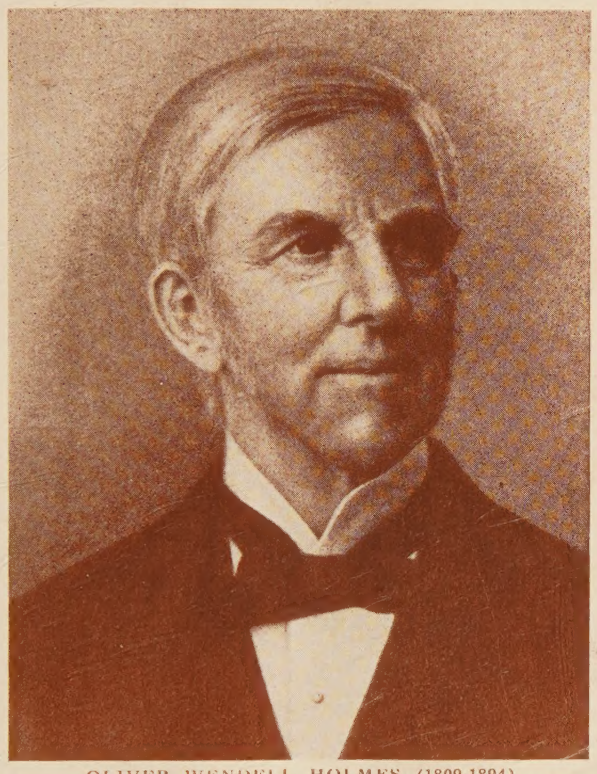

OLIVER WENDELL HOLMES (1809-1894)
Physician and Author

Symposium on Neuropsychiatry, page 413

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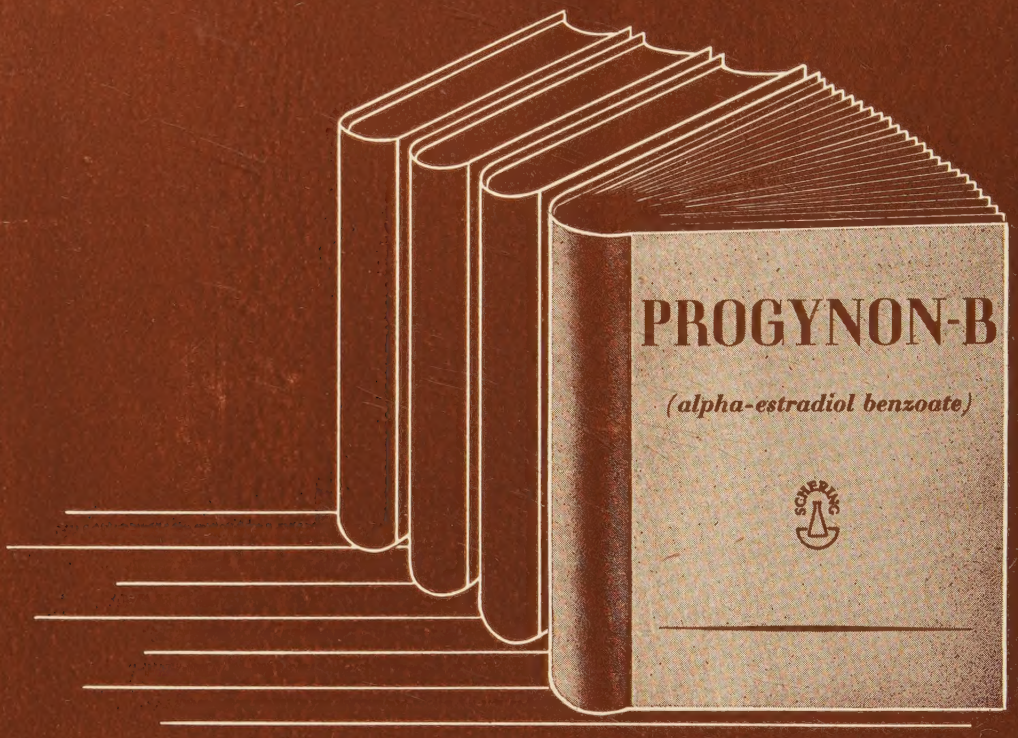
The name to remember!



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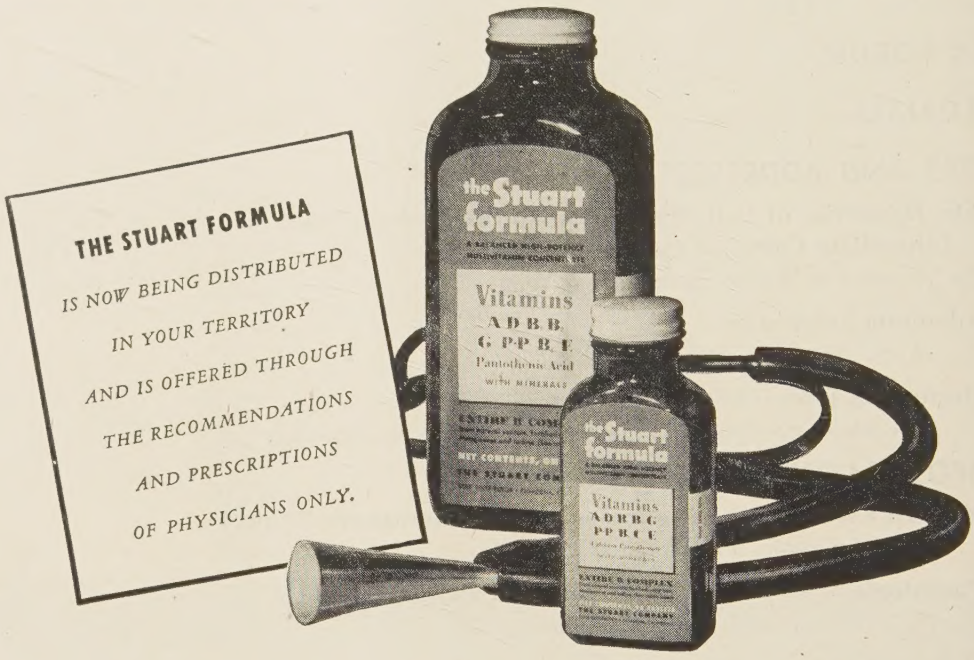

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Animal Disease Research

The greatest Frenchman who ever lived was probably Pasteur, whose aim was to save life and bring about health. He gave the first real impetus to research into the control of animal diseases. There has been an increased interest in animal disease for the reason that some diseases are known to be common to men and animals and it is thought that others may be placed in the same category. If a virus can be proved to be the leading factor in a disease common to man and beast, then it is easier to trace its course or run it to earth in an animal than in man, for the obvious reason that methods permissible in an animal are not allowed in man. Of course, it does not necessarily follow that diseases which appear in both men and animals can be easily traced to their source in animals, and even if they are so traced it does not follow that they are exactly the same as in man. The soil is different. On the other hand, much valuable information can be obtained from animal research both as to protecting from disease cattle and other animals used as food for man, and with regard to discovering points of similarity and so on in the diseases common to animals and men. The elusive virus may be traced to its lair.

It is a large and intricate problem which will yield only to intensive and concerted research. That there is a close similarity between some diseases common to animals and men seems to be proved by the fact that many diseases which occur in all animals have been brought under control in the past few years by treatment with the sulfa drugs. Diseases, such as pneumonia, wound infections, calving and foaling infections, are being treated with unprecedented success by veterinarians in the same way that similar conditions in human beings are being successfully treated. Careful intensive investigation into the diseases of animals may afford a clue to many diseases, the origin and course of which are still unknown.

Butler Hospital Centennial Report

The Butler Hospital at Providence, Rhode Island, has completed one hundred years of service to the mentally afflicted and in an interesting booklet describes the growth and development of the hospital. It apparently started with unusual facilities and has kept well ahead of prevailing conditions ever since. When opened it had space for one hundred patients; it now cares for one hundred and sixty. The fact that so few cases are handled for such an extensive layout is explained in the careful and intensive personalized care given each case. The time of hospitalization has been cut in half in recent years.

Of special interest is the report on the effectiveness of electroshock therapy which was used for one in eight of all patients admitted, and for one in two of those patients suffering from mental illness for which it is most effective. A successful result, permitting the patient to leave the hospital to resume community life within thirty days of the end of the treatment, was attained in fifty percent of the patients so treated, with great saving in hospitalization time. The Hospital also maintains a school of psychiatric nursing which in the last year graduated some 230 nurses. Dr. Arthur H. Ruggles is physician in chief and superintendent of the hospital.

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Open Forum

Religion and the State Hospitals*

DAVID B. ALPERT
Boston, Mass.

Religion in the army or in the state hospital offers the best measuring rod of what religion can accomplish. The chief development of religious instruction will be found, not on the home territory within the traditional churches, but in the armed forces and the state institutions, among large numbers of people away from home, under institutional discipline.

Though this article applies equally to army or hospital, it will present primarily the much older program of religious instruction within the state hospitals for the mentally ill. The custody and care of the mentally ill represent a large part of the cost of state government. These hospitals are supported by tax money, one reason why they should be better known, but only a small fraction of the allotment, considerably less than one percent, is spent on religious therapy.

Three advantages favor the clergyman who serves regularly among the mentally ill in the state hospitals. First, he is an ambassador from the vast, interesting world outside of the institution; secondly, he is not identified with the illness or daily routine of the patient; thirdly, and of most value, his work is primarily among groups.

Between the normal congregation that he serves and the state hospitals into which he comes as chaplain, the minister recognizes many contrasts. The spiritual value of the services, the good effect of public worship and other significant results are better demonstrated in the hospital. Here he is not hampered by prevailing local traditions or by promotional enterprise. Real opportunity is given for therapy, for independent judgment and for better understanding of his people. These convictions then benefit his perspective of society in general, especially in time of war.

As chaplain to the institution or to a large organization of troops away from home, the clergyman stands in a unique and favored position. He is the representative of that larger world upon which both patients and soldiers look with longing. All their hopes and dreams are of returning thereto and of once again exercising their personal freedom.

Most of them forget that they moved, at home, within the narrow horizons of a limited orbit. Away from home and in the institution, they romanticize their former autonomy. They think of the lovely places to go, although in normal life, with no restraints, they often used their time and independence to poor advantage. Patients claim to resent organized activities planned for their leisure and recreation at the hospital. The movie shows, the dances, the classes, the entertainments, all are excellent. Nevertheless, the patients like to dream of the days when they could choose which theatre or movie they would see. They grow restive with always the same people, the same walls; they become "sick and tired" of their environment. Often they wish for the chance to walk down the street and come unexpectedly upon a friend whom they hav not seen in months.

The necessary regime of institutional life become monotonous. Eating at regular hours, with no optio as to food, arising and retiring at prescribed hours, go ing *en masse* to exercise or function, requiring permis sion to mail a letter or to telephone, in these simpl things the patients feel deprived of their personal lib erty and identity. They believe that life outside repre sents freedom in choice of food, eating places, com panions. Liberty they interpret as going to bed an arising at pleasure, buying and spending at individua taste. The mentally ill, or others forced to meet th requirements of institutional life, tend to exaggerat the casual freedoms of normal society, although, i practical terms, the average person probably thinks o freedom in the same way. But the patients forget en tirely the empty, wearisome days they sometimes foun at home.

The chaplain is a reminder of and a link with th home they would have. Because he does not live at th hospital, does not wear the white uniform of the medi cal staff and seems free to come and go, the chaplai represents the larger world beyond the hospital. H speaks of that world and he is the voice of noninstitu tional life, which symbolizes recovery. The mentall ill are very sensitive to voices; some of them, indeed are suffering from "hearing voices" as part of their ill ness. Therefore, they enjoy the preacher's Sabbath voice, trained to speak of hope and faith. It summon them to new impressions and opens new prospects fo thought and conversation.

The pastor is never identified in the mind of the pa tient with illness. And similarly, the chaplain in th army finds that having no power of command is a element of strength in his work. This is the second im portant leverage in the chaplain's approach. He doe not establish the hospital rules and schedules. He may persuade a patient to take medicine or treatment, h may urge the family to consent to an operation bu the chaplain does not prescribe or administer medicine just as in the army he does not give commands or orde punishment.

The chaplain is there for service and instruction Religious services are associated by the patients wit the days of youth and hope and protection. The fa miliar hymn, the well-loved prayer, the sermon, ever element of religious worship recalls the childhood as sociation of happiness with religion, whether unde parental or church care. Even though the habit o church-going may have lapsed or been neglected fo years, the church was important in the early com munity life of the patient. The chaplain and religiou worship are, therefore, symbols of the normal life be yond the institution.

The religious services vary the daily tedium an become powerful agents of remembrance of the tim before illness and failure. Unhappy, bitter memorie of childhood may unconsciously warp the personality Equally powerful and fully as persistent are the happ memories. Most of these are blurred childish impre sions, rooted in religious occasions at home, in th church, or in the school. They come back to the min as a soothing balm.

What are one's earliest happy recollections? Th anticipation of and the busy preparation for a majo

*The manuscript of this article was received in May 1943. In the October issue of *Mental Hygiene* there appears an article on the same subject which is written along similar lines. We publish the article now by courtesy of the National Committee of Mental Hygiene.

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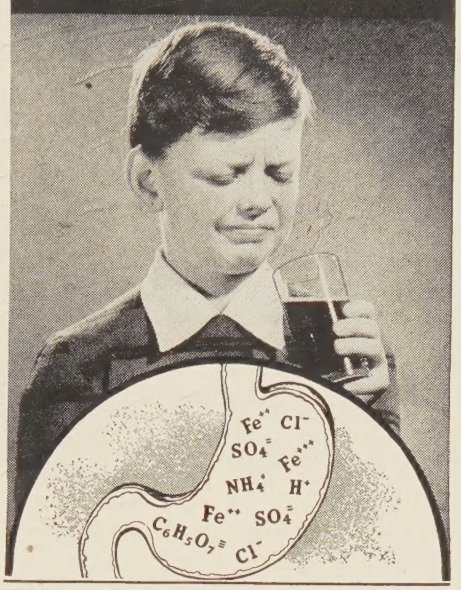

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feast day or religious occasion, the excitement, the expectation of company, the family reunion, glowingly these are retained and pictured in memory. Associated with them was the pleasure of giving and receiving, the special clothes and foods associated with each holy day and its festive mood. Even after long years, the remembrance of these sentiments returns, to make the patient desire recovery. Therein is the foremost value of the religious instruction in hospitals, the awakening of memories and sentiments indigenous to the group life, which centered in the home and about the sacred seasons.

In treatment the physician is compelled to work with one person at a time, with the individual who needs individualized treatment, who must be off by himself, alone for the time being. The chaplain works instead with groups. Even in private interviews, the minister is a reminder of the group. Each person counts in his social relationship, although the individuality of special cases is forgotten. The "mass mind" can have personality but it also will have unity and uniformity for the purpose of obedience and conformity.

Whatever he does and however he serves, the chaplain is the symbol of the group. The approach of the physician, to one person at a time, has to be reinforced by the work of the clergyman through the group. The approach of the clergyman needs to be strengthened and supplemented by the physician's method of individual treatment.

The chaplain does not classify his people as "types" for specialized treatment. Each person who comes to the chaplain is regarded as a human being who must live with others, a person who comes from a home and who needs to feel that he really belongs to a group. The counsel that the chaplain gives in private conference is to people in perplexity and spiritual difficulty because of failure in their relationships within their class. To the physician, a patient describes the aches and pains that are uniquely his own. To the clergyman, the same person will speak of what involves both the speaker and others; there may be regret or disharmony, which leads to breaking the connection with one group; unhappiness or lack of promotion in another; the desire to find oneself emotionally in cementing an old fellowship or in establishing a new one.

The chaplain is the link with all these, the circles of home and family, friendship, residence, employment and community enterprise. Primarily, the chaplain is spokesman for a traditional and respected brotherhood. The church has not only its divine mission of religious teaching but also its social prestige in the eyes of patients and others. Through the approval of that social prestige, people cease to be fragmentary and are regarded each as a person developing his fullest personality through *esprit de corps*.

Language is one of the strongest bonds of a group. The emotional factors inherent in language have never been fully appreciated. Every family has its own idiom, terms of affection or amusement that are meaningless to outsiders. To address a patient in his mother tongue with full understanding of the shadings and undertones of significance, is to forge a strong link of confidence and a bond of sympathy between the patient and his chaplain. By use of the language with which he is most familiar or which he has resumed after the lapse of years, the patient becomes more comfortable.

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Moreover, the emotional values of language play their part in the use of sacred language in the religious service; Latin at the Catholic Mass, Hebrew at the Jewish service, and the traditional and mystic words of each denomination.

The worship in the hospitals must be shorter than in church. Forty minutes, rarely more, should be the length of the service. This means the elimination of repetitions and difficult prayers. The framework of hospital worship should be three or four congregational hymns, a short Bible lesson, unison reading of standard rubric, and a brief talk.

Within the framework of the ritual service, however, flexibility and variety are imperative. There must be continuity of pattern but with sufficient modification to prevent constant sameness. The choice of hymns should not be dictated by the chaplain; the patients should be invited to request the hymns they want to hear. The range of hymns taught should be wide, so that no tune becomes stale. The most important prayers are included, following the themes of the major holy days and the church calendar. Prayers associated with the seasons of particular religious import are inserted in the hospital worship for a month previous to the sacred season. The talks, in conversational voice and narrative manner, must be limited to six or seven minutes and be chosen from the intimacies of life, love, friendship, health, freedom, loyalty, work, ambition, home, family, nature. Feelings should be expressed, rather than abstract thought.

Participation in the service by the patients makes for mutual esteem. They derive satisfaction from helping to arrange the altar, from serving as ushers, from distributing hymnals and prayerbooks. These small tasks are honors that enhance their self-respect through the social approval of the group.

The hospital congregation is more unified in its collective loyalty than any church congregation. Its unity grows through steady association. Week after week, the attendance is consistent and steady. The same people come in about the same numbers. Thus the chaplain is associated with a unified group of great regularity. Continuous and unbroken influence is possible to a greater extent than in the average church where the constituency and the numbers vary from Sunday to Sunday.

Seeing and working with the same people over a period of time, the chaplain is better abole to measure the effective results of his work. Newcomers are readily assimilated. The chaplain may be informal, as he cannot be in the church pulpit. In the hospital he does not stand aloof from the patience. He does not have to cater to the whims of self-appointed defenders of local and obscure procedures; he arranges the services himself to meet the needs and tastes of his flock. He can therefore be friendly and flexible. He can be quick to modify or alter the service, to make immediate substitutions in hymn, prayer or theme, according to the mood and attention of the patients. The brief talk can often be in answer to a question asked by a patient.

Because the group varies so little, the preacher has several weeks in which to prepare for the coming of an important religious holy day. Easter is not confined to one Sunday sermon; for four or five weeks before, he can direct the minds and hearts of the worshipers towards the full meaning of the Resurrection. He can use a blackboard in developing his talks.

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recover their self-respect as they discover that they are considered normal and intelligent. The contribution of each person is evident; phrases and ideas have come from them and met with public approval. And the theme, spread over several weeks, does not exhaust their mental faculties. Instead, it gives a warmer sense of integration and collaboration within the group, by which they find standing in a religious society of ancient and honored traditions.

Popular opinion holds tenaciously to an idea that the mentally ill are religious fanatics who in their illness cherish the illusion that they are saints or holy persons or the Messiah. This popular notion is without foundation. Most of the patients feel a sting of shame that they are in the hospital. Few of them have the exaggerated idea of being founders of cults or the embodiment of all holiness. Whenever such symptoms do appear, manifested by excessive ablutions, fantastic cleanliness, long beards, or perhaps a sense of being controlled by a powerful central radio station in the clouds, the patient merely reveals his own former insecurity. He is only dramatizing his fears of lack of acceptance by the people he knew. Religious mania may mean a deep feeling of perplexed responsibility for the protection of his own group or realization of his failure to be integrated with his fellows.

The desire to be generally accepted is so dominant among the patients that many of them attend their own services regularly and still insist upon joining the worship of other denominations. In this way they hope to be included in the larger whole.

Recently some of the patients proposed that they have a confirmation service. Those who were selected were very serious about their preparation. In beautiful processional they entered the chapel, sang the music and participated in the ritual. The opportunity was extended to them to say a few words. The first began, "Let us pray God to bless the doctors and nurses for their thoughtfulness and kindness among the sick."

These words, genuinely spontaneous, brought applause from the patients. They were part of a group, paying tribute to others of the group who had served them. And the chaplain's influence and authority stem from his service as a representative both of this group and of the home group.

Religious services for the mentally ill in state hospitals bring together the fields of medicine and religion. The work of the chaplain in state hospitals has rarely been described but it suggests a kind of socialized religion which parallels the army chaplaincy and will influence the religious worship in the community.

Correction

A regrettable error occurred in Dr. William H. Thaler's article on cardiorenal spasm in migraine which appeared in our June issue. In the last sentence of the third paragraph, page 328, a line of type was inadvertently dropped out, with the result that the author's meaning was not clear. The sentence should read as follows: "Most often, however, in the cardiorenal picture, there is a strong suspicion of an emotional strain (and this covers a lot of ground; from the cup of Bacchus to the arms of Venus), and one of the strange phases of this dilemma, is the fact that the 'strain' may have occurred as far back as a week or even longer."

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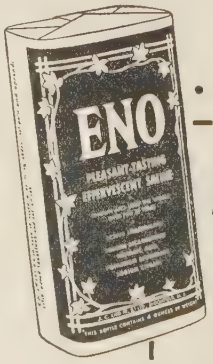

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Age of Men in the Armed Forces

In a report prepared by the Office of War Information, after consultation with Army, Navy, Marine Corps, and Selective Service, it is pointed out that men in and above the upper Selective Service ages are serving the armed forces by the millions in assignments they fill as well as their juniors. The average age of enlisted men in the armed forces is about 25.1; in the Army, 25.78; in the Navy and Marine Corps, 23.50. The situation, according to age groups, is as follows: In the Army, 60.5 percent of enlisted men are under twenty-six; in the Navy, 71.2, and in the Marine Corps, 77.3. The highest concentration is in the 20-22.9 age group in the Army and Marines and in the under-20 group in the Navy.

Army authorities emphasize the great number of assignments for which older men are fit, according to this report. These older men now overseas with combat units are there because they have proved their capability in a tough training course, yet Army technical and medical authorities say that at higher ages fitness for combat becomes the exception rather than the rule. This difference is shown at the local registration boards where in November 1943, only about one out of every sixty selectees at ages under twenty was rejected for military duty on account of such disqualifying defects as amputation, active tuberculosis, grave mental disorders and so on. In the group twenty-five to twenty-nine the proportion was three times as great, one in twenty, while in men thirty-five and over, the ratio was one in ten. During that month at ages under twenty only about one out of every four was rejected for medical reasons, and at thirty-five and over, nearly half. Older men are more frequently discharged from the Army and are hospitalized more often and longer and are more than likely to be among the small percentage dying of disease. Advancing age has an even more pronounced effect on the rate of discharge. The lowest rate of discharge for physical or mental defects was found for those under twenty. The rate of discharge among the men twenty-five to twenty-nine was almost double that for men under twenty, and men thirty-five and over had a rate of discharge more than three times as high as men under twenty.

Analysis of the Army's mortality rate in 1943 shows that the death rate from disease does not increase to any extent up to the age of about thirty; however, mortality rates from disease among men thirty to thirty-four are about double those for men under thirty, while for men thirty-five years and over the death rate from disease is almost six times that for men under thirty.

In the Navy age plays a different part, as experience and proficiency are more important criteria when jobs are assigned; however, a high degree of physical fitness is required, for the reason that in addition to being able to withstand the rigors of seagoing life, naval personnel must not be unduly handicapped in the event that they become separated from facilities for medical attention. Regardless of their regularly assigned duties, all men aboard ship are potential combat personnel under battle conditions. In a small segment of the Navy youth is imperative. For motor torpedo boats and the pilot seats of naval combat planes, young men are specified, and men under thirty-five are preferred for submarines.

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In the Marine service youth is essential since close combat is the duty of all but a few. Older men for guard duty in this country number less than one percent, and specialists such as lawyers and business men are likely to be older than the average Marine because of the experience and education required.

The Army Air Forces and Naval Aviation do not accept pilot candidates over twenty-six years of age, and records of the medical offices show why. In pilot training, failures rise with age. Among men of eighteen and nineteen failures were twenty-four percent; at twenty and twenty-one the percentage was twenty-three, and at twenty-six and twenty-seven it was forty-one. Physical and related demands of flight help to explain this ratio. Eyesight, which tends to deteriorate with age, must be superior to judge distance and direction in three-dimensional space and at high speeds. Hearing has to be good and reactions must be quick and sure. The pilot must also be able to withstand the particular stresses of flight. Statistics on pilots and cadets do not indicate the ages of men in the Air Forces or Naval Aviation as a whole. Air crew gunners may be over thirty and some tactical commanders have expressed preference for gunners that are older men. The mechanics that keep the planes in the air do not have to be young and the value of experience in such positions favors the older men.

In paratroop action special qualities are required and an age limit of thirty-two is imposed. Especially high physical standards are observed and emphasis is placed on lungs and heart in selecting these men. In selecting men for ground combat the training is very strenuous and it has been found that only the young can endure the hardships. The same may be said of the engineer's group where youth has been found a necessary attribute in construction battalions. A number of skilled construction workers over thirty-eight years old were recruited but for physical reasons many of these men were later released from the Army.

The Navy Seabees pride themselves on their physical toughness as well as their mechanical skill. The average age in this service is now estimated at twenty-eight to thirty. Hard physical conditions bring out aches and pains in older men more quickly than in the younger ones; however, it is maintained by some that the older men coming as they do largely from construction trades, are physically fit in many cases even for hand-to-hand combat.

Decline in Appendicitis Mortality

Appendicitis is no longer an important cause of death, according to a survey of mortality statistics of this disease for the past fifteen years made by the Metropolitan Life Insurance Company (*Statistical Bulletin,* March 1944). Among Metropolitan industrial policyholders, aged one to seventy-four, the death rate from appendicitis has dropped from 14.4 per one hundred thousand in 1929 to 5.2 in 1943, a decline of nearly two-thirds. The major part of this remarkable reduction has been achieved in the last four years, in which period the rate was cut almost in half. The greatest improvement has occurred between the ages of five and forty-four years, the reductions in this age span ranging from fifty-seven to seventy-seven per-

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cent. Among young children and elderly people the gains were least marked. Substantial gains have also been made among colored persons but the improvement has been least pronounced than among white persons. In general, greater reductions have been recorded among females than among males. According to official records of the Census Bureau, the appendicitis death rate was reduced in every one of the forty-eight states during the twelve-year period, 1930-1942. The range of improvement runs from forty percent in North Carolina to seventy-four percent in Rhode Island and seventy-seven percent in the District of Columbia. In four states the rate of mortality from appendicitis was reduced by more than seventy percent, in this twelve-year period; in twenty by sixty to seventy percent; in twenty others by fifty to sixty percent, and in only five by forty percent.

The report points out that inasmuch as the death incidence of appendicitis has not been lowered, therefore, the improvement in the mortality rates is the result of improvement in care and treatment after the disease has developed. One important factor in the reduction of mortality from appendicitis is the use of chemotherapy in cases complicated with peritonitis and another important factor is improved diagnostic procedures which have helped to bring patients to operation before complications have set in.

The mortality from uncomplicated appendicitis has never been high. The principal danger has often been the rupture of the appendix which resulted in peritonitis. It is estimated that more than eighty percent of all appendicitis deaths have resulted from this complication.

Our Contributors

Ferdinand Roder, M.D., Brooklyn, N.Y., was born and educated in Vienna, Austria, and received his degree in medicine from the University of Vienna. He was connected there with the Allgemeine Krankenhaus and the Institute for Psychology. In 1923 he received a grant from Dr. Stonborough to continue his studies on inflammation and cancer. He has published a number of medical articles dealing principally with biological problems. He came to the United States in 1939, obtained his license in 1941, and is now practicing medicine in Brooklyn, N.Y., and during the summer months in Sharon Springs, N.Y. His hobbies are philosophy and music.

* * *

Alfred Gordon, M.D., Philadelphia, Pa., is a graduate of the Université de Paris Faculté de Médicine. He is at present consultant in neuropsychiatry to a number of hospitals. His research work is continuous in various phases of neurology and psychiatry. His pastime is music, and his hobby is fencing.

* * *

S. M. Alter, M.D., F.A.C.P., Los Angeles, Calif. was graduated in medicine from Harvard Medical School in 1912, and specializes in internal medicine. He is a Fellow of the American College of Physicians and a licentiate in internal medicine. He is engaged in clinical research work in the acid-base balance of the blood, as related to various diseases and is trying to work out a classification. He is a member of the Pierian Sodality of Harvard College, the Boylston

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Medical Society of Boston, and various other profe sional and lay organizations. He is affiliated with t Cedars of Lebanon and Good Samaritan Hospitals Los Angeles. His hobbies are music and golf.

* * *

Robert Boyd, M.D., Brooklyn, N.Y., was gradu ated from the College of Physicians and Surgeons, C lumbia University, in 1891, and served an internshi at the Astor Memorial Hospital. For four years served as an officer in the U.S. Navy and resigned engage in private practice. He practiced medicine f twelve years in Puerto Rico, and for the past sixte years has been in general practice in Brooklyn. H hobbies are ornithology, story writing, rifle practic sailing and music.

* * *

W. J. McCormick, M.D., Toronto, Canada, qual fied as a Licentiate of the College of Physicians an Surgeons of Ontario, in 1906. Following the 1937 ep demic of poliomyelitis in Toronto, he made an exte sive study of this disease in comparison with beribe which resulted in his hypothesis of vitamin B d ficiency as an etiological factor in poliomyelitis an sleeping sickness. At Winnipeg, in 1941, he made personal study of the nutritional status of many the victims of the two latter diseases. He has recent visited California, where he made a clinical study the nutritional background of a number of last sea son's poliomyelitis cases.

* * *

Wladimir Eliasberg, Ph.D., M.D., New York N.Y., is a psychiatrist and psychotherapist. He wa born and educated in Germany, and attended the Un versities of Berlin and Heidelberg. He was graduate in medicine in 1912 and in 1924 he obtained his de gree of doctor of philosophy at the University Munich. He is a Diplomate of the American Board Psychiatry and Neurology and a member of severa local and national societies relating to his specialty

* * *

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* * *

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* * *

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* * *

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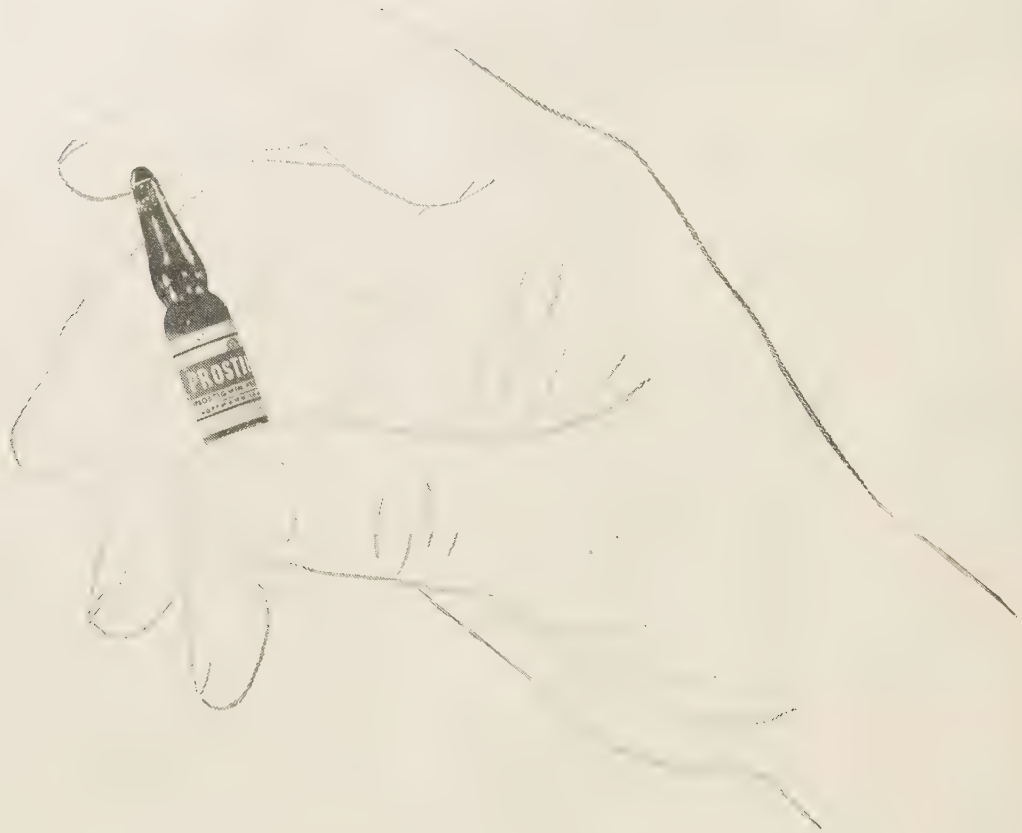

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THE DYNAMICS OF CELL RESPIRATION AND GROWTH AND THE IMMEDIATE CAUSE OF CANCER

FERDINAND RODER
Brooklyn, N. Y.

We learn from the physiology of plants that "the nger, the more vigorous, the more active and the e rapidly growing protoplasma is the more water it ains." (1) We further know that plants do not grow ss their cells possess a certain turgor, i.e., a certain rostatic pressure. Similar observations were made oeb in his experiment (2) on regeneration in lower nals. If an incision was made into the body-wall the acles which had begun to grow but were situated ve the site of the incision lost their turgor and ped growing. In other experiments (3) concerned cially with the mechanics of growth he transferred ving tubularians into sea-water of varied concentra- . The effects were the following: "The more di- d the sea-water was the more rapid the growth. Of se, finally, a limit is reached where the water be- to have a poisonous effect. It is remarkable that maximum of growth took place not in sea-water of nal concentration but in more diluted sea-water." se experiments show that the effect increases with eased water-intake up to a certain limit and that effect becomes discontinuous in character, being anged for something new, quite different and irre- ble if the limit is reached. "The amount of water ained in the cell plays still another rôle in the ess of organization and influences the process of division. If we decrease the amount of water in gg of the sea-urchin segmentation is retarded, and e use a sufficient high concentration of sea-water ay be stopped entirely."

he established fact that seeds contain substances gher osmotic pressure with greater attraction for r has been the basis of a theory that the increased otic pressure stretches the membrane and leads to formation of interstices where new material can eposited. As I have pointed out in a previous publi- n (4), it is hard to understand how a pressure n the cell acting equally in all directions could bly form or enlarge interstices, especially in an al cell, and Loeb's experiments do demonstrate proportionality can be found only between pres- and growth, not between material and growth t conspicuous in an experiment on regeneration in ularia where regeneration of tentacles took place ugh the new-formation of the stem remained un- indicating lack of material). I came, therefore, e conclusion that presence of material is a neces- sary prerequisite but not an actuating factor of growth. This is supported by the work (1916-1921) of MacDougal who "came to the conclusion from his extensive experiments with growth that the first step in the process is an increase in the volume of the protoplasma by hydration. This increase in volume is usually but not always accompanied by the incorporation of materials other than water to the colloids of the protoplasma with the entailed additional capacity of absorbing water (5)."

I further mention the fact, as interesting in this connection, that if in growing plants (the cells of which are under growing pressure from within) the pressure is increased by putting them into a plaster cast the development of the inner tissues is greatly accelerated.

This set of facts, taken collectively, furnishes evidence that mechanical forces are capable of causing and promoting growth. Expressed in general terms, in the language of energetics, this means that mechanical energy is transformed into chemical energy. Which effect of the increased mechanical energy actuates growth, the process by which this transformation is brought about, is as yet unknown. Furthermore, these facts suggest that water may have another function in growth in addition to the one generally attributed to it as a solvent for growth material.

The energy for growth is derived from aerobic and anaerobic respiration; growth means syntheses, heightened chemical energy. As long as the dynamics of respiration is not perfectly understood we cannot hope to solve the problem of growth. That mechanical forces play an important rôle in respiration has already been shown by Palladin (6). When he transferred etiolated leaves from a more concentrated solution into a less concentrated (i.e., one which caused water to enter) the respiratory rate was increased[1]. The reverse took place if the leaves were transferred into more concentrated solutions. Maige and Nicolas (7) considered that both respiratory intensity and the respiratory quotient increased with the increased turgidity of the cells. However, as it is not clear, on the basis of our theories of respiration, how increased turgidity can influence respiration, it is usually assumed that "it may be only an indicator of favorable conditions for growth and vital activity and thus not a direct causative fac-

[1]Compare this paradoxical effect, paradoxical in so far as material is concerned, with that in Loeb's experiments on Tubularia.

tor in increasing respiration (8)." In this connection I want to call special attention to certain facts found by Loeb (9) in his experiments on artificial parthenogenesis: 1, that apart from oxygen the causation of development requires two factors, hypertonic solution of any kind and the formation of a membrane; 2, to his conclusion "that the latter is really the essential step" by raising the rate of oxidations; 3, to two other facts, that water is absorbed from without at the time of membrane formation and that "the fertilization membrane is in the condition of tension equal to the osmotic pressure within the membrane chamber"; and 4, to his statement: "As soon as this process [formation of the membrane] has taken place development sets in in the egg. Why this is the case we do not at present know."

In an attempt to explain the genesis of inflammation and cancer and to account for their characteristics I proposed in 1929 a hypothesis of cell respiration, which I am presenting here in a modified form, changed not as regards the basic idea but only so far as the mechanism involved is concerned. This hypothesis states that in the living cell oxygen is present not only in molecular but also in colloidal dispersion. This statement is proved by the following facts:

1. Pflüger and Pfeffer, each in his field, had already been led, in the course of their extensive work, to the assumption that the cells contain a surplus of oxygen. This idea, however, was not compatible with recognized theories and the explanation of Pflüger that the surplus oxygen may be chemically bound (intramolecular) proved untenable. If the assumption as such were true the surplus would have to be physically bound and as a surplus of oxygen in a true solution is unthinkable in a cell it could not be in a form other than colloidal dispersion. A direct proof of a surplus is impossible as this would require the measurement of the amount of oxygen present in the cell at a given moment. However, there is an indirect way to prove the surplus. Although we cannot measure the amount of oxygen we could measure the amount of its end effect, that is, how much CO_2 is evolved when we remove to the greatest possible extent the obstacles which normally restrict the full display of its action—action that would be exhausting if it were not restricted. This is just what Zaleski and Reinhardt (11) did (with a different purpose in mind) when they examined the respiratory activity of plants after destruction of their structure by grinding or pulverizing them. They found that grinding enlarged the processes of oxidation. When the respiration of seeds which had been soaked, peeled, and ground was analyzed, it was found to be about double in extent compared with that of living seeds. *An almost identical increase took place in hydrogen.* In contrast to it the CO_2 output of seeds treated in the same manner but dead for a long time was equal to that of unground seeds of the same kind. Another series of experiments showed that other objects (leaves, etc.) which normally respire very energetically had a reduced respiration or even no respiration after the process of grinding, in contrast to the seeds which normally respire very little.

These experiments furnish proof of a surplus of oxygen in plant cells. The extreme instances are represented by typical anaerobes on the one end, by cells which normally respire very energetically on the other end. The respiration varies with the species and th kind of tissue.

The method did not only destroy structure, it al produced surfaces; it enlarged them, the more it a vanced. If surfaces of the kind and number normal present in the cell could have been laid open, the not effect would have been much greater, but, of cours of no duration. Thus, these experiments also show th the mechanism of respiration is dependent on surface not on structure (the latter being the conclusion which the authors arrived). It is clear, however, th a closed arrangement of surfaces is necessary to sa and to store a given surplus.

There is something else that has been proved, th remains unexplained to this time and that is interestin in this connection. Pflüger (12) found the paradoxic fact that saliva contains five times as much oxygen other secretions and much more than it could possib hold even if saturated at atmospheric pressure. H explained the difference between saliva and the oth secretions by the fact that the latter stagnated in th body thus enabling the cells to consume their oxyge However, his conjecture concerning the cause of th high oxygen content, viz., that the difference in tem perature in the capillaries of the lung and the glan might be the cause, was disproved. It looks as if th secretion, containing mucin and immediately di charged after formation, may be qualified by the properties to furnish a pattern of what is going on the cells and thus to reveal on examination one of the secrets.

2. It is to be expected on account of Reinhardt's find ings that the greatest surplus will be found in growi cells. Godlewski (13) showed that the respiratory qu tient in oily seeds during the period of greatest respir tory activity remained constant at a value of 0.55-0.6 This low value may still be explained by the assum tion that the conversion of oil into sugar consumes th missing oxygen, but this assumption fails when objec other than oily seeds are taken into consideration. Ha rington (14) found that the respiratory quotient apple seeds decreases very considerably with the tem perature, indicating (as he himself states) a storage oxygen. I link this acknowledgement in a particul case with a general recognition, each of which in com bination with the other complements and integrates th other: "The production of carbon dioxide in anaerob respiration is greater, however, than that which wou be produced by the formation of ethyl alcohol an carbon dioxide by fermentation alone, so that some the carbon dioxide must have its origin from oth sources than from the activity of zymase." (16) Lik wise, once the idea is present and in the foreground the mind, storage of oxygen is proved by the value the caloric quotient in Meyerhof's experiments (17 the quotient was surprisingly higher than that expecte on the basis of theoretical calculation. If the liv costs of a person are greater than can be expected the basis of his earnings he must have savings.

3. A proof of another kind is the compressibility animal cells, which requires the existence of compre sible phases. It can be demonstrated by the followi experiment: an isolated kidney is put into a plast cast and the proportion of the space assigned to th cells is reduced by increasing the space occupied i liquids (blood and urinary output) by caffeine admini

ion. This effect would not be possible if the cells e incompressible.

. As regards nervous tissue, how can the metabolic heat changes occurring during stimulation of nerves he absence of oxygen and continued for a relatively g time be reconciled with those occurring in the sence of oxygen otherwise than by the assumption an oxygen surplus and its gradual dwindling?

t may be useful at this point to recall some simple ervations in order to make this strange idea of oxy- existing in a form other than molecular more fa- iar. A glass of water allowed to stand for some time ibits air bubbles on the walls of the glass. As this sition from the molecular dispersion to macroscopic regation could not be reached by a leap (*natura facit saltum*), this phenomenon proves the transi- occurrence of intermediate stages, of successively rged aggregations of gas molecules on the inner ace of the glass in an order of colloidal magnitude. re stable commonly known gas emulsions are exem- ed by whipped cream and stiffly beaten egg white. he latter is put into a syringe, its compressibility easily be demonstrated. Now, as the conditions formation and preservation of aggregations of oxy- molecules are specially favorable at the periphery he cell, where the molecules flowing in continuous ps in the same direction through the narrow gates ntrance along surfaces which adsorb them and nst surfaces which intercept them, both events hering aggregation, so that they can be trammeled nd caught by closing in lipoids, and meeting more more surfaces, lipoids, and proteins the deeper penetrate, the assumption may be justified that egated oxygen molecules become arrested by pro- ive colloids and temporarily stored. If this assump- is correct we have to expect that respiration will nd on the amount of lipoids in the protoplasma. adin (18) has shown that after lipoid extraction amount of CO_2 formed in respiration is the less more lipoids have been extracted.

y conception of the dynamics of respiration is as ws: The respiratory system of the cell consists of requires for its proper functioning six factors: an ic membrane, the turgor pressure within the cell, gas pressure in the oxygen globules counterbalanced he tension of the first two factors, protective col- , surfaces and respiratory enzymes. In normal iration in a resting, nonoperating cell (e.g., muscle the decomposition products of the first stage of ration, i.e., the anaerobic phase, specifically or- c acids and ethyl alcohol, dissolve some of the d haptogene-membranes of the oxygen globules and heir oxygen free. (This view fits into the general f that the initial decomposition proceeds in the nce of free oxygen but independent of it.) The sed oxygen, activated by the pressure to which it subjected during its stage of aggregation, oxidizes ntaneously these oxidizable (dys- or anoxidizable periments on models) substances, thus disposing iem. The balance between tension of the proto- na membrane and inner cell pressure does not be- disturbed, since at the same rate as globules dis- ar water, formed by the oxidation, occupies their . The transformation of energy can never be ac- olished without degradation of energy, in this the degradation of the energy of the compressed and then released oxygen molecules. The principle of the slow burning gas engine, separate compression, preceding union and combination with the other reagent, is here anticipated. This theory, therefore, claims that the principal means used by the cell to increase the concentration (mass action) on the one hand and the chemical potential (affinity) on the other hand, is the aggregation of oxygen molecules in colloidal dispersion and their condensation. This condition causes an effect which by far surpasses in extensiveness, intensiveness and variability that produced by adsorption and enzymatic activity alone. The immense amount of free energy created by the elastic membranes (during a lifetime) operating against a pressure of many atmospheres is not wasted altogether, as would be the case if it were converted solely into heat; it serves a useful purpose, it is being retransformed into chemical energy and, thus, the general tendency for energy in non-living matter to be dissipated is, partly at least, reversed.

Turning to single action, what would we have to expect on the basis of this conception in a single twitch? Compression must produce extra heat. Has any extra heat been discovered, not accounted for by chemical reactions? The first steps in muscle contraction are water displacement (just as in growth) and heat evolvement. The heat evolved is identical in amount with that liberated under anaerobical conditions but also with that liberated after the twitch is over[2]. "The heat evolved cannot come from either glycogen or phosphagen breakdown" as these processes take place after completion of the twitch. "Its origin is unknown." (18) This kind of heat has its counterpart in plants. Bonnier (19) found that in growing plants the actually produced heat is much greater than that theoretically calculated on the basis of actual and possible exothermic reactions.

The respiration in a more active cell proceeds along the same line but at a higher level and on a greater scale; the cases differ only gradually and not in principle. The more active cell is marked by: 1, more extensive breakdown or decomposition; 2, higher acidity; 3, higher osmotic pressure; 4, higher hydrostatic pressure by increased water attraction; 5, higher condensation and activation of oxygen; and 6, increased respiration. The characteristics 2 and 3 have already been demonstrated by Loeb (3) and were recently confirmed by Hill (20), who further showed that the osmotic pressure increases proportionately to the energy liberated (point 6). From point 5 can be deduced that oxidation of dysoxidizable substances will only take place in an aerobic cell with intact mechanism. "Under anaerobic conditions lactic acid accumulates in the form of lactate; in the presence of oxygen (aerobic conditions) the lactate is rapidly disposed of, but only when the muscle is alive; in injured muscle the lactate cannot be removed. The removal of lactic acid is therefore an oxidative process (in the sense that oxygen must be present) and is dependent on the intervention of living tissue." (21)

The described mechanism achieves also another task of utmost importance in animal life, the accurate regulation of the chemical processes with regard to extensiveness and intensiveness, place and time, and all this with the greatest possible economy. This task is per-

[2]Compare with it heat production and oxygen consumption of nerve.

formed in two ways, in time by increasing the chemical potential of oxygen and thereby shortening the time of reaction, in space by releasing more oxygen:

1. The greater the breakdown (see preceding paragraph) the higher are the following steps and the higher the rate of respiration. We have also to take into account that it is not a single kind of fuel which has to be oxidized but a great many, each of them of a different oxidizability, the special demand of which has also to be met.

2. The greater the breakdown the broader are the following steps (the larger the scale), the more extensive is the dissolution of oxygen globules and the extent of respiration.

3. As the work to be done regulates the extent of the breakdown, no energy loss other than heat can occur and the greatest possible economy is assured.

4. The regulation works at the exact place and time, where and when it is needed.

Whatever rôle has been assigned to the respiratory enzymes, it is certain that they cannot play this rôle of accurate instantaneous regulation in animal life with its rapidly changing urgent demands, linked with movement, secretion and a self-produced circulation. Their uncontrollable rôle, comparable in some respect to that of spark plugs, which too have to be present in appropriate number, is somewhat more important but also limited in the life of adult plants. Such plants, leading a more or less passive existence for the greater part of their lives and in the greater part of their bodies, are generally supplied with abundant energy and, what is more, are not confronted with urgent tasks which have to be performed within a limited time. But if the need arises, as in growth, whether it is at night when the stomata are closed and the oxygen supply deficient, or in seeds, it is stored oxygen (not enzymes) which supplies supplementary oxygen; this is as necessary as stored surplus fat and protein. These substances are safe from its attack as long as the aerobic mechanism of respiration is not yet set in motion by the intake of water (see below). In contrast to these necessities oxidase makes its first appearance at the end of the growth period (22), its absence not being offset by higher catalase activity, which is widely divergent from intensity of respiration (23).

In a very active cell not only are the intensities of the respective energies (mechanical, chemical, heat, etc.) on a higher lever, but also the quantitative factors of energy (the masses, concentration, capacities) are increased by additional regulatory mechanisms (blood flow, etc.) which provide for the necessary masses. I shall call such a cell hyperenergetic, which, of course, should not be taken figuratively: it denotes increase of the free energy of the cell.

The insight, gained thus far, into the mechanics of respiration and into the subtle cell changes involved makes it possible to approach the problem of growth. It may seem to be implied in what already has been said. Growth appears to be simply another kind of prolonged work performed by an unspecialized cell which has no other work to do and which uses its available energy in this direction or to be an extra work of an adult cell which uses up the extra energy left over from its special work. We know from experience that both kinds of work can go on during the same time, as when a working muscle hypertrophies or one kidney becomes enlarged after the removal of the other. However, between a working and a growing cell there a two fundamental differences. In the working cell th breakdown is the independent variable (within th cell) and the regulating mechanism does not create an surplus of utilizable energy. In the growing cell it i as Loeb's experiments on Tubularia demonstrate, th pressure which is the independent variable and it doe create a surplus of energy. And if we return to Loeb experiments on fertilization we can see that the mech anism of growth is set in motion as soon as formatio of a membrane, supplemented afterwards with a gela tinous layer around the egg, has taken place. Howeve free energy is not created by the presence of condition masses or potential energies, but only by gradients i.e., by another free energy. This applies to all forms o free energy and, therefore, also to the free energy o growth. As soon as the free energy of the membran starts to act, starts to exert pressure and to adsor lipoids and oxygen, growth is starting. Oxygen, growt material, water, and membrane, singly only condition of growth, if combined in dynamic relation, become th cause of growth.

The treatment with hypertonic solution, the correcti factor which saves the life of the cell corrects the onl fault in this wonder-work, the missing balance betwee water and this kind of membrane, simply by withdraw ing the surplus of water. If this is the case, it cann make any difference whether this procedure is applie before or after membrane formation, whether at a tim when the rate of respiration is low or high. The mechan chemical effect of relatively too much water can b seen in the fact that untreated eggs more than doub in size and in the poisonous effect which disturbe balance has in the experiments on Tubularia. If o account of the disturbed balance the membrane being stretched to the limit of its extensibility, no in wardly directed pressure can be exerted any more b the overstretched membrane and the whole mechanis of aerobic respiration is upset. The aerobic cell h again become a relative anaerobe dependent on oxid tions on a level which structure and enzymes allow a level insufficient for active life, and the cell dies ju as the unfertilized mature egg does, but, in contrast the latter, an unnatural death. The mechanism is al upset if the amount of water is decreased to a certai limit, as is seen in the experiments of retardation an final stopping of cell segmentation and cell divisio The upset occurs because the same effect, impairme of respiration, can be brought about as well by mis ing elasticity as by missing pressure. The same re soning applies, can and has to be applied (if the h pothesis shall serve its purpose) to any aerobe, wheth animal or plant cells are affected, whether growth or i retardation and final stopping, whether any of t named factors of aerobic respiration (membrane, tu gor and its constituent, water, stored oxygen, surfac or protective colloids) are concerned. As the laws nature are the same in small and in great matters, a sence or deficiency of one of these factors must h the same effect everywhere on respiration (not on t cell) and must manifest itself as well in a growi Tubularia and in a developing egg as in the short li of aerobic plants under anaerobic conditions or in th immortal life of a cancer cell.

(*To be continued*)

ADENOMA SEBACEUM

With Report of A Case

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lthough I have had under my observation a num- of cases of this dermatosis, which is considered e of rare occurrence, I shall report only one case, i the intention of drawing different conclusions n the accepted conception of the etiology of this ction.

Dermatologists are at variance in their opinion of definition of this dermatosis; some regard the le- s as true adenomata, while others agree that the or masses are composed of hypertrophied seba- us glands. Sir Norman Walker, however, believes the lesions belong to the lymphangiomata group. ace, an exact definition cannot be formulated. If thing, this dermatosis may be designated as a ign epithelial neoplasm affecting the cheeks and nasofacial folds, with scattered lesions on the chin, e, and forehead. These lesions consist of globular semiglobular papules or nodes, symmetrically dis- ed, of a pinkish or reddish hue, and varying from size of a canary seed to that of a split pea. Some- es there may be discerned interspersed among the ller lesions typical fibrous growths, distributed an irregular manner; one may also see capillary ngiectases here and there either upon the growths between them. Two forms have been recognized, nely, the Balzer and the Pringle types, which in ence are but modifications of the same pathological cess.

Histologically, these lesions consist of a hyper- sia of the sebaceous glands, especially in the Bal- type, while the Pringle variety shows simple hyper- phy of the lobules or racemes of the sebaceous nds and dilatation of the blood vessels.

Etiology

The etiology of this cutaneous malady is rather cure. It usually begins early in life and shows no dency to spontaneous retrogression. One causa- factor, which is mentioned by many authorities the subject, is not perfectly clear to me; nor do I in what relation such a factor stands to the actual matosis. I thus most emphatically deny that re- led or defective mental development is a causative nt in the production of this disorder as suggested certain observers. It is furthermore stated by a mber of dermatologists and pediatricians, that this matosis is associated with the condition known as ose sclerosis of the brain, and that it is quite fre- ntly concomitant with imbecility. Likewise, infan- eclampsia has been held responsible for the causa- of these benign tumors. It would seem to me that much stress has been laid upon the mental aspect an etiological factor. In the series of cases that e under my observation, the lesions occurred in ntally intact and normal individuals, some of whom e even above the ordinary intelligence type. Hence etiological conclusion which I arrive at is entirely variance with the conclusion of a great many au- rities.

What rôle the endocrine system plays in the production of adenoma sebaceum is rather speculative. Yet, taking into consideration the early age of the patients thus affected and the simultaneous evolution of the incretory glands during the process of growth, one might draw the inference that we have to deal here with a trophic disturbance of the endocrine type.

The prognosis must be guarded, though in occasional instances spontaneous disappearances have been observed.

Therapy

Electrolysis has been advocated by dermatologists, but with little result. Sir Norman Walker has succeeded in destroying the larger lesions with the fine point of the microbrenner or electrocoagulation. The latter and the Kromeyer or water-cooled radiation have been variously utilized in the eradication of these neoplasms, but with little success. The same may be said of carbon dioxide snow. Roentgentherapy in dermounits doses has been employed with varying results. These physiotherapeutic measures may be supplemented by the internal administration of fractional doses of thyroid and arsenic in the form of Fowler's solution; the latter must be carefully watched, however. The vitamin B complex should also be tried.

I wish to report one outstanding case, in point of severity and dissemination, which will illustrate the foregoing.

Case Report

The patient, Mrs. K.P., aged twenty-seven, married, came under my care January 6, 1940. Her family history disclosed that her mother had died from "rheumatic fever"; her father and other members of the family are living and well.

Her past history showed that she had had the exanthemata during childhood, and several attacks of appendicitis, and tonsillectomy at an early age. Her teeth were apparently normal.

Present history: The dermatosis had lasted about fifteen years or more. It appeared first on both cheeks symmetrically, and then invaded the chin and nasolabial folds. On inspection, a mottled facial condition was noted, which on closer scrutiny was found to consist of numerous small elevated pinkish papules and nodes. Numerous dilated capillaries were noted everywhere traversing these lesions.

Serological examination was negative; the blood picture was likewise negative, except for a low hemoglobin index—sixty percent. Urinalysis was negative. Blood pressure was 100 systolic; the diastolic was not audible. The patient weighed 114 pounds. Her hair was streaked with grayish tufts—a tendency towards canities. Mentally she was quite alert and vivacious, expressing herself intelligently and rationally. She had always been rather bright at school and of normal, ordinary intelligence, which would disprove imbecility or feeblemindedness as causative factors.

Diagnosis: Adenoma sebaceum.

Treatment: The patient was under my care from January 6 to June 17, 1940, with no appreciable improvement. Roentgentherapy was tried in fractional or full dermounit doses, followed by ultraviolet radiation. Foreign proteins intramuscularly were also used. A number of lesions were exposed to the Kromeyer light. Occasional lesions showed a tendency to retrogress up to a certain point, when the process would stop. Nothing whatsoever was used locally in the form of ointments or keratolytic agents. Fowler's solution was administered in ascending doses for some time and then discontinued, for there was no change noticeable in the general appearance of the dermatosis. Likewise the endocrines were tried, singly and in combination, with similar results. Carbon dioxide snow was not used in this case, for the lesions were too numerous for such an attempt. During the entire time of treatment the patient took vitamin B complex in considerable doses. She left unimproved after six months treatment.

Conclusions

1. The etiology of adenoma sebaceum is obscur and defective mentality or imbecility are not direc etiological factors.

2. It occurs early in life, i.e., during childhood or a the beginning of puberty, and may occasionally lea to spontaneous retrogression.

3. The various therapeutic measures, such as physic therapy, biochemical procedures, internal medicatio of hormones and vitamins, have proved of no ava in my series of cases, especially in the one under con sideration.

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656 MACCABEES BUILDING

DERMATITIS FROM CHEMICAL FUMES

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We present herewith a report of a case of dermatitis which proved to be due to contact with various chemical fumes in a laboratory in which the patient worked.

Case Report

The patient, Miss C. A., white, twenty years of age, was referred to me by her family doctor. She had suffered from an extensive pruritus and dermatitis for one year, which was the same winter and summer, but the pruritus was somewhat better one week before and one week after menstruation. She had been perfectly free from any form of dermatitis before she went to work in a chemical laboratory which prepared and bottled estrogenic hormones, and vitamin B_1 for subcutaneous use. Her present condition started after working several months in the laboratory.

At first there were maculopapular lesions around her finger tips which opened and oozed serum forming crustations. It was associated with a marked pruritus. The extreme pruritus and scratching had aggravated the dermatitis until it extended along both arms and forearms, anteriorly and posteriorly, up to the shoulders. For the past several months her face had also become involved and she was unable to continue working.

She had had infantile eczema when one month old, which lasted for one year. She has been subject to head colds, nasal obstruction, and sneezing spells. Menstruation was normal, starting at eleven years of age.

Allergy tests.—She was tested for inhalants, animal epidermals, food and bacterial proteins of the respiratory system. She was positive to the following: pork, lettuce, dog hairs, and egg white, plus; rabbit hair and grapefruit, plus 1; cat hair, chicken, tuna fish, sardines, and house dust 1:100, plus 2; and salmon, plus 4.

The patient was asked to abstain from all foods and contacts which gave positive reactions. In two or thr months the dermatitis subsided under local and genera treatment. Within a few days after her return to he work in the laboratory the same condition develope again. In three or four weeks she was almost as sick a she had been at first. This was illustrated on three occ sions. The firm refused to give samples of chemicals f patch testing. It then was self-evident that the de matitis was a result of her contact in the laborator with the various chemicals or fumes present, and it ha nothing to do with the positive food reactions whic she had demonstrated from the allergic studies. Afte this fact was established, the patient was advised t change her occupation and disregard the positive foo reactions which were found when the tests were mad

She was perfectly well for six months during whic time she ate all the foods from which she was told t abstain. However, being unemployed, she decided t resume her job at the chemical laboratory this tim merely doing office work. The pruritus and dermatit reappeared in a week's time and began to spread as did before. By this time the patient and her family wer convinced of the uselessness of her working in that la oratory. Since then she has been working in a store a salesgirl and has been well for the past year.

Comment

This is an illustration of a patient who had a respir tory allergy during her life and a skin allergy in i fancy, but the latter symptoms, however, were lying do mant. When studies were made, positive food tests wer obtained. After proper evaluation they were not foun to be the exciting factors responsible for the curren complaint. This was because a new contact became re sponsible for the recurrence of her skin allergy.

EIGHTEENTH AND CHESTNUT STREETS

Symposium on Neuropsychiatry

THE MODERN CONCEPTION OF NEUROSES AND ITS THERAPEUTIC IMPORT

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Experience following the termination of World War revealed the fact that among a large number of afcted individuals that came under observation, sufferg from various forms of nerve damage, there was a rtain percentage who escaped material injuries, but esented a variety of morbid manifestations of a oublesome and persistent character. There were: 1, sense of fear evident in all their relation to others, ar of darkness, of noises, of meeting people, of open aces (agoraphobia), of being alone in room (monoobia); 2, A state of constant anxiety, with a state of certainty; 3, Extreme nervousness and irritability on the least provocation; 4, Difficulty of sustaining tention and concentration. These various disorders ere so persistent that the afflicted veterans were unle to hold positions of any kind.

The present World War II presents additional oprtunities for observation:

First: Effect of the draft period. Young persons ho formerly occupied responsible positions in indusy complained of losing interest in their respective bs and in many instances were obliged to decline ork because of an inability to meet the requirements emanded of them. The reasons were: undue irritality, restlessness, insomnia, difficulty of concentratg, no matter how uncomplicated the work might be.

Second: Effect of the draft period on the parents f the draftees. In the largest majority the effect of ie draft on parents presented the same manifestaons as in the draftees themselves and became gradly accentuated as the time of induction approached. he uncertainty of their sons' fate when they are ctually sent to the combat areas maintained the parits' state of anxiety, depression, irritability, insomnia id all the other manifestations of what constitutes neurosis. It is evident that we are dealing here with n actual trauma of the emotional make-up.

The experience in World War I showed that, while some cases the recovery of the sons and parents as complete after the soldiers returned from the war nes, nevertheless in many instances the trauma was profound that after years of peace, disturbances their private lives not infrequently led to intoleble reactions, characteristic of neuroses. The soalled shellshock mentioned so frequently during the st world war also presented examples of neurosis. hese conditions were not the result of any direct auma of the nervous system by explosion of shells. he emotional system, upon which the entire nervous echanism depends for its proper function, was unle to deal properly with the stress put on it by the plosions and concussions, when the combatants were under prolonged strain caused by the terrifying experience.

In addition to this type of neuroses, war may present casualties of an apparent organic nature which are, nevertheless, without a material substratum, such as transient motor or sensory paralysis of one or several limbs; amblyopia or deafness; disturbances of the function of various sphincters, or phenomena simulating generalized and unilateral epileptiform seizures. As in the first group, the intellectual functions remain intact in all such cases.

The multiple bizarre phenomena of neuroses are essentially the same during a war period as in peace time. In both instances they have reference to affective functions (sentiments, emotivity) and not to the intellectual status. The literature abounds with examples of functional nervous disorders referable to the gastrointestinal apparatus, cardiac action, respiratory phenomena, and the urinary apparatus, all simulating structural damage, which on careful clinical and laboratory investigation have proved to be false, as corroborated by subsequent events. There are cases on record in which tumors of the brain, various forms of palsy of the limbs or of segments of the body, loss of speech or memory, have been all suspected from the point of view of structural damages in the brain, spinal cord or peripheral nerves, but eventually have proved to be expressions of neuroses.

Correlating all the foregoing phenomena from the causative viewpoint, let us see what constitutes the basic factor in all varieties of neuroses. The war situation strikes an unusually severe blow at one of the most deeply rooted instincts, namely, that of self-preservation. It sets in motion all those emotional forces that are associated with it. In the combatants the fear and anxiety are so intense that they mobilize and uproot all those emotional forces. The disclocation of these psychic elements may remain in this disturbed state for a long time after the termination of war, as the experience previously described demonstrates. The prolongation of morbid manifestations is observed in all the individuals concerned (sons and parents) during the period of war anticipation (draft, induction, post-induction and post-war periods).

In civil life, somatic disorders simulating organic lesions but without a material substratum, as indicated above, are frequently the result of inner conflict. Symptoms calling to mind those of angina pectoris; sudden loss of motion or sensations, disturbed gastrointestinal or vesical function; sudden loss of speech or mutism, sudden loss of vision, etc., may all be the

result of a disorder in the dynamic forces of the affective part of the personality and are nothing more than an unconscious escape from problems of reality, of which the sufferer is unaware. In other words, the physical morbid manifestation are a response to some hidden unconscious factors of an emotional character; they are a symbolic substitute for an unbearable emotional content.

All these bizarre phenomena, which are conversion or replacement processes, are the essential characteristic of neuroses. Such a concept of neuroses, in which physical manifestations are in direct relationship to affective disturbances, leads logically to adequate therapeutic procedures. Among the latter two methods are of outstanding value. One is reeducation which attempts to give the sufferer from a given neurosis an intelligent understanding of his difficulties, particularly the mode of their development and their intimate relationship to environmental factors. The other method aims at a complete deep-seated reorganization of the individual for which, in my opinion, the method of choice is psychoanalysis. Its purpose is not only to exercise an influence on outbreaks of individual neuroses in the patient's life; its great contribution lies in the prevention of neuroses, in mental hygiene in general, and therefore in preparation for more successful living.

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THE PATHOLOGICAL AFFINITIES OF BERIBERI AND POLIOMYELITIS

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Following the 1937 outbreak of poliomyelitis in Toronto I made an extensive study of the comparative features of beriberi and poliomyelitis, which led to the hypothesis of vitamin B deficiency as a basic etiological factor in the latter disease (1). Subsequently other papers (2, 3, 4, 5, 6) in support of this hypothesis were published. Recently, the National Foundation for Infantile Paralysis has been so impressed with the possibilities in this respect that large grants have been made to several university research groups to investigate the nutritional angle in poliomyelitis.

A careful scrutiny of the accompanying chart reveals a striking parallel in the epidemiology, symptomatology and pathology of these two diseases. Such a close similarity would seem to indicate some common major etiological factor, suggestively vitamin B deficiency. The fact that practically all of the parallel epidemiological features may be explained physiologically on the basis of associated increase in vitamin B demand is even more strongly suggestive. It is known, for instance, that the bodily requirement of vitamin B_1 is in direct relation to the metabolic rate. It is known also that the metabolic rate is higher in childhood and early youth than in the adult; it is higher in the male than in the female, higher in the physically active than in the sedentary, and higher in pregnancy than in nonpregnancy. It is known, too, that the need for this vitamin is much greater in hot humid weather, owing, perhaps, to its increased loss through perspiration and urine. A logical explanation may thus be provided for all the hitherto inexplicable epidemiological features of poliomyelitis.

The historical background of these two diseases also is strikingly similar. Beriberi has been recognized in the densely populated countries of the orient for many centuries. Its incidence in epidemic proportion, however, has become more noticeable following the introduction of the practice of rice polishing, whereby the vitamin B factors are removed from the grain. Likewise poliomyelitis, although apparently known to have occurred sporadically since ancient Egyptian times, did not appear in epidemic form until 1840, when it was reported by Heine in Germany, immediately following the adoption of the patented process of white-flour milling (Vienna, 1839), by which the vitamin B containing elements, the bran and the germ, were also discarded.

Since the author first advanced the hypothesis of vitamin B deficiency as the basic cause of poliomyelitis in 1937, clinical trials of vitamin B therapy in this disease have been made (2, 4, 7, 8, 9) in both America and Europe, with results almost as favorable as in the treatment of beriberi by extract of rice polishings. The individual dietary history has also been investigated by the author in some two hundred cases (Toronto, 1937; Winnipeg, 1941; Los Angeles, 1943), and in every case the dietary intake of vitamin B_1 was found to be definitely deficient. A recent survey of Toronto's 1937 poliomyelitis cases disclosed the fact that among fifty thousand of the city population on municipal relief diet at that time there were 184 cases of the disease—a ratio of 3.68 per thousand; whereas, in the remaining population of six hundred thousand there were 562 cases—a ratio of .94 per thousand. It will thus be seen that the incidence of the disease was four times greater in the lower nutritional level.

Another fact suggestive of the correlation of nutritional deficiency is the higher incidence of poliomyelitis in the United States in the years 1916, 1931 and 1943, with 27,200, 15,746, and 12,401 cases respectively. Each of these peaks of incidence came at a time of national economic and consequently nutritional disturbance—1916, during the first world war; 1931, in the period of the "depression" and unemployment; and 1943, in the present world war, when many mothers, engaged in defense industries, are unable to safeguard adequately the nutrition of their children.

The factor of physical overexertion in both beriberi and poliomyelitis is most significant. In the first place the age incidence of both diseases covers the period of greatest physical activity—infancy, childhood and early youth, the male, generally more active than the female, being predominantly affected. There is also an individual history of definite overexertion in work or play in most cases of both diseases. Levinson, cited by Lewin (10), has shown that monkeys, subjected to excessive exercise in swimming, developed a more severe form of poliomyelitis, under inoculation with

BERIBERI	POLIOMYELITIS
Epidemiology	
Age incidence—infants and young adults.	Age incidence—children and adolescents.
Sex incidence — predominantly male, with marked selectivity for pregnant females.	Sex incidence—male preponderance, with marked predilection for pregnant females.
Seasonal incidence—endemic in tropics, peak in late summer or early autumn.	Seasonal incidence—epidemic in temperate zones, peak in late summer or early autumn.
Physical overexertion a predisposing factor, with paralytic selectivity for muscles most in use prior to illness.	Overly active children mostly affected, with paralytic selectivity for the muscles most in use prior to illness.
Traumata and surgical operations reported as precipitating a pernicious form of the disease.	Surgical operations, usually tonsillectomy, frequently reported as precipitating the bulbar type of the disease.
Symptomatology	
Onset with fatigability, feeling of heaviness and pain in legs, gastrointestinal disturbances with anorexia, frequently associated with primary febrile disease such as influenza, malaria, dysentery, etc. Spasticity and cramps in the early stages, with exaggerated reflexes; later lost reflexes and flaccid paralysis, usually of the ascending type if severe,—legs, back, arms, intercostals, diaphragm, bulbar and cranial nerve involvement. Marked muscle tenderness is characteristic throughout the disease, as is rapid pulse—120 to 140.	Early fatigability, fever, headache, gastrointestinal dysfunction—anorexia, vomiting, constipation or diarrhea—stiffness in back of neck, pain in back and legs, hyperesthesia with exaggerated reflexes in early stage, followed by lost reflexes and flaccid paralysis, with spasticity or "spasm" persisting in the opposing muscles. In severe cases the paralysis usually assumes the ascending or "Landry" type, passing from the spinal to the encephalitic form, with bulbar and respiratory involvement. Marked muscle tenderness is characteristic, as is rapid pulse,—out of proportion to fever.
Pathology	
Degenerative changes in the lower motor neurons, with neuronphagia of the myelin sheath and later of the axis cylinder, resulting in marked wasting of the involved muscles. In severe cases noticeable changes occur in the anterior horn cells—chromatolysis, vacuolation, pyknosis, etc. There is diffuse lymphocytic infiltration throughout the nervous system.	Degenerative changes in the lower motor neurons, including usually the anterior horn cells—neuronphagia, chromatolysis, vacuolation, pyknosis, etc., with marked wasting of involved muscles. Perivascular lymphocytic infiltration (cuffing) is characteristic in this and other acute degenerative diseases of the central nervous system, taking on a more diffuse pattern in subacute and convalescent cases.
In the spinal fluid a slightly increased protein and cell content have been noted but the observations are insufficient to be conclusive. In the blood the differential leucocyte count follows the pattern of the spinal fluid in poliomyelitis—an increase in polymorphonuclears at first, followed by a marked lymphocytic increase.	In the spinal fluid there is usually a marked increase in the protein content and a marked leucocytosis, polymorphonuclears predominating at first and being later replaced by an increase in lymphocytes.
There is marked edema of the central nervous system generally, with edematous involvement of the paralytic extremities.	There is a marked edema of the cerebral and spinal structures, involving also the paralyzed extremities. The edema of the latter is often such that the full extent of muscle wasting cannot be determined until it recedes.

the experimental disease, than did control monkeys kept at rest in cages. Furthermore, in both diseases, the muscle groups most in use are usually found to exhibit the greatest degree of paralysis. If the legs are used mostly, as in marching or bicycle riding, the leg muscles are most prone to paralysis; whereas, if the arms are most in use, as in certain occupations—typists, musicians, painters, etc., the arm and hand muscles are usually subject to greater paralysis. This may explain why, in the human biped, the legs are predominantly affected in both these diseases; whereas, in monkeys the arms and tail are mostly affected. Carbohydrate metabolism is directly related to physical activity, and the vitamin B requirement is directly related to carbohydrate metabolism.

A striking example of this selective muscular involvement in poliomyelitis was presented by two cases which I saw last year in California. In one of these cases, the patient, M. L., a boy aged eleven years, had been, for several weeks prior to the onset of his ill-

ness, helping his father at the work of drying and packing apricots during hot summer weather in the Fresno district. In this work the arm and hand muscles were mostly used in scraping the fruit from drying pans, packing in boxes, etc. The residual paralysis and wasting were most pronounced in the corresponding muscle groups. After six months' convalescence, the boy's hands had the characteristic "griffin-claw" appearance, with marked wasting of the palmar interossei and thenar muscles.

In the other case, R. J. R., a boy aged twelve years, whose illness began in October, gave a history of having done a lot of parallel-bar work and rope climbing in his P. T. exercises at school. The objective in the rope climbing was to pull the body up, hand over hand, a distance of fifteen feet in nine seconds without using the legs. The school record for this feat was two seconds. Needless to say, the predominant residual paralysis in this case was also in the arms and hands, with marked griffin-claw deformity in evidence at three months convalescence. (From these instances it should not be implied that such exercise on the part of children is objectionable, but rather that an adequate intake of essential food elements should be the first prerequisite. It might be a wise precaution on the part of instructors in physical training to guard against overexertion of students at the beginning of the fall term, at a time when their vitamin B reserve is often at lowest level.)

Another interesting feature in the selective incidence of both beriberi and poliomyelitis is their marked predilection for pregnant women. Top (12) reports that in Detroit the incidence of poliomyelitis was found to be approximately four times greater in pregnant than in nonpregnant women of similar age groups. Coupling with this the observation of Shute (13), that pregnancy increases the requirement of vitamin B_1 about four times, we see the possible etiological correlation of vitamin B_1 deficiency.

A further pronounced affinity between beriberi and poliomyelitis is shown in the predisposing effect of traumata and surgical operations. Braddon (14), in a report of beriberi in the Mediterranean area during the first great war, as cited by Funk (15), states: "Beriberi symptoms are not infrequently noted, acute for the most part, after trauma or overexertion. After an operation, severe fatal manifestations occur in persons who, before the operation, showed no symptoms at all."

Likewise, in poliomyelitis frequent references have been made in the literature to the precipitating influence of surgical operations. Aycock (16) cites many such references—mostly tonsillectomy cases. Francis, Jr., et al (17), report five severe bulbar cases in the same family following tonsillectomy and tooth extraction, resulting in three deaths. In six such cases, which I investigated in the 1937 epidemic in Toronto, three were secondary to tonsillectomy, the other three being secondary to appendectomy, mastoidotomy, and tooth extraction. Kessell (18) reports one of the cases in last summer's California epidemic as having been the immediate sequel of tooth extraction. It is not surprising to find tonsillectomy predominating in this type of case, since it is the operation of major incidence in modern childhood. I am of the opinion, as expressed in a previous paper (5), that the precipitating factor in all such postoperative cases, in both beriberi and poliomyelitis, may be the effect of surgical trauma and anesthesia in increasing vitamin B_1 requirement, rather than the generally accepted theory that the denuded site of operation may provide a favorable "portal of entry" for the virus. At any rate this latter theory cannot be applied to postoperative beriberi.

Regarding the pathological findings in beriberi and poliomyelitis: In both we find marked edema of both the central nervous system and the affected extremities. This condition is often so pronounced that the wasting of muscles is masked until the edematous fluid is absorbed,—hence the term "wet beriberi." Some authorities regard the edema of the spinal cord in poliomyelitis as the cause of much of the temporary paralysis, owing to pressure and restricted blood supply. This edematous status in poliomyelitis may account for the frequent observation that victims of the disease are apparently "plump and well nourished." In infantile beriberi the edema is such that the body weight increases as death approaches.

Residual paralyses and contractures assume almost the same pattern in both diseases, tending to the talipes equinovarus type as a result of paralysis of the anterior tibial and peroneal muscles and spastic action of the opposing muscle groups. When the upper extremities are involved, which is relatively rare in both diseases, the small muscles of the hand and forearm are generally affected, resulting in the characteristic "griffin-claw" deformity.

Another pathological feature common to both diseases is the marked lymphocytic or mesodermal-glial reaction. In beriberi there is a diffuse lymphocytic infiltration of the perineural tissues generally. In poliomyelitis the lymphocytic infiltration takes on a more acute form, the small round cells being found in perivascular clusters—"cuffing." This characteristic distribution of extravasated lymphocytes in poliomyelitis (noted also in encephalitis and other acute forms of nerve tissue degeneration) may be due to the fact that these cases usually come to necropsy in the acute stage of a short illness, before the more diffuse infiltration of the lymphocytes is effected as in beriberi; while victims of the latter disease usually come to necropsy in the terminal stage of a prolonged illness. In poliomyelitis there is also a marked lymphatic pleocytosis of the cerebrospinal fluid. A differential cell count of the spinal fluid in the early phase of the disease usually reveals an increase of the polymorphonuclear neutrophiles, while as the disease advances the lymphocytes predominate. Unfortunately there are insufficient cytological recordings of the spinal fluid in beriberi to be conclusive. The blood findings in beriberi, however, seem to follow the pattern of the spinal fluid in poliomyelitis, as previously stated. It would thus appear that the variation in the lymphocytic phenomena of both these diseases might be merely the expression of a different intensity of reaction to the same etiological agent.

Howe and Bodian (19) intimate the possibility that the general lymphocytic reaction in poliomyelitis may be a protective response of the organism, and that the elimination of large numbers of lymphocytes in the intestine may be a means of eliminating the virus during convalescence. The fact that other degenerative

seases of the nervous system, including encephalitis, urosyphilis, spinal sclerosis, beriberi, etc., are accom-nied by a somewhat similar lymphatic reaction ould seem to indicate that it is related to the degenera-on of nerve tissue generally rather than as a specific sponse. The recent reporting of lymphatic pleocytosis d increase in protein content of the spinal fluid in a se of oxygen deprivation resulting from carbon mo-oxide poisoning (20) gives support to this conception, d suggests the possibility that this mesodermal-glial sponse may in reality be the inception of a reparative action to the disintegration of nerve tissue, the differ-tiation of the extravasated lymphocytes serving, per-aps, to lay the ground work for the formation of euroglia for the repair of the breach.

The work of Stuckey (21) in observing the effect nutritional deficiency on the lymphatic system may ve us a more definite clue to a possible relationship. e examined a large group of children from the Ken-ucky mountains, many of whom had enlargement of nsils, adenoids and lymph glands. Their diet con-sted mostly of white bread, margarine, boiled potatoes nd root vegetables, with tea, coffee and soft drinks; ut with little or no milk, eggs, fresh fruits or green egetables—an obviously deficient diet, lacking mostly ne B vitamins. In most of these cases the lymphatic ypertrophy was found to be amenable to nutritional rrection without resort to surgery.

On this same basis the lymphatic reaction in polio-yelitis may serve as an index of vitamin B deficiency, nd may thus be regarded as a reparative response to he destructive action of such deficiency. It would, herefore, be logical to expect that most of the post-nsillectomy-poliomyelitis cases would be found in his deficiency group.

Pathological findings similar to poliomyelitis have lso been reported in experimental anoxia, as in alti-ude aeronautics and in the inhalation of oxygen-isplacing gases such as nitrous oxide, carbon tetra-hloride, carbon monoxide, etc. Gerard (22) has shown hat the rate of tissue respiration, or oxygen require-nent, in the central nervous system is about thirty imes that of other body tissues. Van Liere (23) states: "Of all the tissues of the body nervous tissue is the east capable of withstanding oxygen want." It is well nown also that there is a lowered oxygen uptake and n increase in the lactic content of the tissues gen-rally, and of the central nervous system in particular, n anoxic and vitamin B deficiency states. Kinnersley nd Peters (24) have found that even a small crystal f vitamin B_1 added to an *in vitro* preparation of fresh B_1 avitaminotic brain tissue will quickly increase the xygen uptake of same. Rosenbohm (25) has found hat an accumulation of thirty mg. of lactic acid per ne hundred grams of brain tissue can initiate nerve ell proteolysis. Of further significance is the state-nent by Van Liere (23) that in severe anoxia there s produced an ascending type of paralysis (similar to andry's). First the legs lose their power, then the rms and neck become affected, followed by bulbar nd cerebral involvement. A correlation of these ob-ervations may provide a physiological explanation of he sequence of pathological changes common to beri-eri, poliomyelitis and other degenerative diseases of he nervous system, and may throw new light on the tiological relationship of post-operative states in both beriberi and poliomyelitis. It may also provide an explanation for the unusually rapid pulse which prevails in both these diseases—a compensatory effort on the part of the heart to overcome the anoxia associated with vitamin B deficiency. It may even explain the mystery of the enlarged heart in beriberi—the effect of the long continued compensatory effort.

The foregoing study of the comparative pathology of beriberi and poliomyelitis leads the author to the conclusion that the destructive changes in the nervous system in the latter disease are apparently referable to a metabolic biochemical disturbance, rather than to an inflammatory reaction. Accordingly, the substitution of the term poliomyelopathy would seem to be more correctly expressive of the true nature of the disease.

Discussion

Since the discovery of the virus and its successful inoculation in monkeys by Flexner in 1909 poliomyelitis has been regarded as a specific transmissible disease. Recent advances in our knowledge of the nature of the viruses, however, seem to call for a revision of the interpretation of these experiments. The early concept of the virus as an ultramicroscopic living organism has, with the perfection of the electron microscope, apparently given place to the chemical theory, in which the virus is regarded as a protein substance of definite molecular size, ten millimicrons, capable of extending its action in the nervous system by catalytic chemical action, as elucidated by Twort (26). This new concept raises the question as to whether the interpretation of the Flexner experiments, by which the disease came to be regarded as specific and communicable, was justified.

Previous to this time Holt (27) had reported 566 cases of poliomyelitis, in twelve percent of which the paralysis developed as an immediate sequel to some other acute disease of childhood—frequently scarlet fever and measles. The author knows of several cases which developed immediately following lobar pneumonia, and one after acute middle ear disease. These observations, in the light of our newer knowledge of the nature of the virus, make it appear possible that the paralysis in this disease may be a secondary manifestation, brought about by metabolic disturbances associated with the primary or precipitating disease process.

A similar situation has prevailed regarding the sequelae of alcoholism—polyneuritis, paralysis, Korsakoff's syndrome and Wernicke's encephalitis. For many years these were thought to be referable to the specific effect of alcohol on the nervous system. It is now generally recognized that these neuropathic phenomena are caused by vitamin B_1 deficiency as a secondary effect in alcoholism. Likewise, postdiphtheritic and posttyphoid paralyses were formerly thought to be the direct effect of the specific bacterial toxins; whereas, now they are generally regarded as due to vitamin B_1 deficiency, secondary to the infectious process.

At the time of the Flexner experiments in poliomyelitis transmission Koch's postulates seemed to have been fully met, with the one exception of the culturing of the specific infectious agent; and the most natural conclusion, based on the principles of bacteriology then extant, was that the disease must be specific and communicable. If, however, the virus be

regarded as a biochemical substance associated with the disease process, its origin may indeed be endogenous, thus eliminating the whole question of communicability, "means of spread" and "portal of entry". Even though this chemical substance, extracted from the nervous system of a victim of the disease, is capable of reproducing a similar disease process in experimental animals by inoculation, this, in itself, is not conclusive evidence that the disease is communicable under ordinary conditions. It is possible that a similar biochemical substance, or virus, may be obtainable from the involved nerve structure in beriberi, and capable, perhaps, of producing similar disease symptoms in experimental animals by inoculation. Apparently no experimental research work has yet been done to determine this possibility, although a somewhat similar experiment has recently been reported by Pinkerton and Swank (28), who were able to obtain from the nervous system of otherwise healthy B_1 avitaminotic pigeons a substance identical with the virus of psittacosis, capable of reproducing the disease in healthy birds by inoculation.

Beriberi has been definitely proved to be caused by deficiency of vitamin B_1, yet, as recently as four decades ago, it was regarded as infectious and contagious, in much the same way as the present conventional concept of poliomyelitis. This is shown by the following quotation from Manson (29):

"The proof of the germ theory of the cause of beriberi lies in the circumstance that the disease can be introduced into virgin country and there spread. That is to say the cause can multiply. Spontaneous multiplication is a property peculiar to living things. Therefore, the originating agent of the toxin of beriberi is a living thing—a germ. The toxin of beriberi is not conveyed in drinking water. This is easily proved. Two institutions placed side by side, as for example the male and female prisons in Singapore with identical water supplies; one, the male, is attacked with beriberi; the other, the female, is exempt. We, therefore, must conclude that the virus of the disease is conveyed to man either by the air or through the skin by contact, or by means of some insect or other animal which inserts it under the skin, or by a combination of these ways. So far, unfortunately, we have nothing to show either what the toxin is or what the germ that produces it is, nor what the precise nidus in which it is produced is, nor the way by which it gains access to the body."

The medical history of pellagra, another disease now known to be caused by nutritional deficiency, has been very similar to that of beriberi. For many years a fungus associated with maize was thought to be the etiological agent. While the disease was regarded as such and treated accordingly the mortality rate was as high as fifty-seven percent. Under vitamin therapy and nutritional correction the mortality rate has been reduced almost to zero.

Irrespective of the etiology of poliomyelits or means of transmission, if any, the associated presence of a biochemical substance which we call a virus, even though it may be capable of reproducing a similar disease process in experimental animals by direct intraneural inoculation, should not be our main concern; but rather the prevention or correction of the precipitating factors. For, if the virus be as widespread as now generally believed—in the excretions of many socalled carriers or reservoirs, and consequently in sewage and drinking water—the impossibility of escape from exposure or contacts is obvious. The most logical conclusion would seem to be that the great bulk of our population must possess some natural physiological barrier to the development of the disease or to subsequent paralytic involvement, and that the means of acquiring such protection should determine our prophylactic and therapeutic efforts.

As a key feature of experimental research on this problem laboratory assistance is being sought to try out the possibility of transmitting beriberi paralysis by intracerebral inoculation of a glycerin extract obtained from the nervous system of a B_1 avitaminotic monkey, in a manner parallel with the experimental inoculation of poliomyelitis virus. If this should prove to be possible the whole mystery of poliomyelitis would be solved.

In the meantime, since there is no recognzied effective treatment, and since vitamin B deficiency is so generally prevalent, the author suggests that children during the summer months, industrial workers in high temperatures, and soldiers in intensive training or manoeuvres be given double the usual requirement of vitamin B_1 as a possible prophylactic; and further, that vitamin B therapy be given a fair clinical trial in all acute and convalescent cases.

Summary

A marked resemblance in the epidemiology, symptomatology and pathology of beriberi and poliomyelitis is cited in support of the author's hypothesis of vitamin B deficiency as the basic etiological factor in poliomyelitis.

The modern concept of the poliomyelitis virus as a chemical substance of definite molecular dimension, rather than an ultramicroscopic living organism, as previously thought to be, calls for a revision of the interpretation of the Flexner experiments as to the specificity and transmissibility of the disease, with consideration of the possibility of the endogenous origin of the virus.

It is suggested that the paralytic phenomena in poliomyelitis may be directly referable to acute B_1 avitaminosis, precipitated by converging factors which increase the metabolic rate and accordingly the bodily requirements for this vitamin, such as febrile conditions, age, sex, climatic conditions, physical overexertion in work or play, and pregnancy; and that the paralysis may be a secondary manifestation rather than a primary specific disease.

The associated virus is regarded as a biochemical product of the disease process, which, although capable of producing paralysis in experimental animals by catalytic chemical action in the nervous system, is not necessarily a means of spread of the disease under ordinary conditions.

It is suggested that a virus-like substance may be obtainable from the nervous tissues of beriberi victims —an experiment which apparently has not yet been attempted—and an appeal is made for cooperative laboratory assistance to determine such possibility.

A study of the comparative pathology of beriberi and poliomyelitis suggests the substitution of the term poliomyelopathy as more correctly expressive of the true nature of the latter disease.

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16 GOTHIC AVENUE

MALINGERING

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Malingering, if proved, is a grievous offense in any Army. Reese, in his work on *Medicolegal Jurisprudence,* cites the case of a private in the British Army who simulated deafness to gain his discharge. A Board of three Army Medical Officers, appointed to examine him, made various tests, but to no avail, and malingering was suspected. The man apparently had his wits at all times, as evidenced by the fact that one day, while one member of the Board was speaking to him (to hold his attention) another quietly approached the man from the rear, and when within a pace of him fired a blank cartridge from a revolver. This did not phase the man, however, as he did not flinch. It was suggested that an alarm clock be set to ring a few minutes after the man was asleep in his cot that evening. This was done and the Board awaited results. As soon as the clock sounded the soldier awakened, shut off the alarm, and proceeded to go to sleep again. A General Court found him "guilty of malingering" and he was given a dishonorable discharge from the Army and sentenced to serve ten years in the penitentiary at hard labor.

While serving with the First Squadron (Fourth U. S. Cavalry) in the Philippines, during the Insurrection, I encountered a case of malingering. One morning at "sick call", I asked a man whose name was on the "sick report book", "What seems to be the matter with you?" He answered: "I am suffering from diarrhea and severe griping pain in my abdomen."

I prescribed a powder and ordered him to return at noon for another of these powders which for lack of a better name, I called "x" powders, consisting of salol, opium and bismuth subgallate, and were put up by the hospital corpsmen in their spare moments. I had used them in treating numerous cases of diarrhea and dysentery which occurred among the soldiers and always had good results.

The man was marked "quarters" which relieved him from drills and all other duties. The following morning, at sick call, I asked him how he felt and he answered: "The medicine did me no good. I am just the same." I said: "This is rather peculiar, as the powders I prescribed have always relieved the other soldiers who suffered from the same condition that you are, therefore, the only thing to do is admit you to the hospital and put you on a diet." As soon as he was in bed, and his clothes locked up in the property room, I ordered a diet consisting of a cup of hot malted milk and soda crackers, three times a day. Instructions were given that he was to use a bed pan the first two days. No medicine in any form was prescribed. I told the hospital steward to "pass the word" to the Hospital Corpsmen that they were not to give him anything in the form of rations, and if they disregarded my instructions I would put them before a "general court martial" for disobedience of orders.

From the first day, and thereafter, the man had no diarrheal stools; they were normal and formed. For the first few days he complained to the hospital steward that he was not getting enough to eat, and was told that the doctor had ordered what food he should have. Later, he complained to me, saying: "I could eat more". I told him the diet he was getting was the best for him, but he could have more soda crackers, if he wanted them. On the fifth day in the hospital, he in-

formed me that he thought he could be sent to "quarters", but I told him he had to remain in the hospital until he was fit for full duty.

When he had been in the hospital three weeks, the entire time on the diet of malted milk and crackers, I informed him he was being discharged to full duty and, if he "got sick" again he would be hospitalized and put on the same diet.

About eight weeks later his name was again on the "sick report". I called him in and asked, "What is the matter with you this time?" He answered nervously, "Nothing. I want a dose of salts".

Three months later, I met his Troop Commander who said (mentioning his name) "you had him in hospital for three weeks. I don't know what you did to him, but while he used to be very shiftless and a worthless soldier, now I haven't a better soldier in my Troop." You made a man of him.

While in charge of a Base Hospital, ten miles from the north firing line, I had, in hospital, a soldier suffering from a bad attack of dhobie itch on his genital organs. In four weeks the condition had cleared, so I informed him that he was all right again and was discharged to duty. He said he "was not fit for duty", and I told him that I was the doctor and that he would return to duty at once. "I have to keep patients moving, as casualties are likely to arrive any day from the firing line, and I must have room for them."

Upon leaving the hospital he said to the hospital steward, "The doctor thinks he is very smart sending me to duty, but I will be back in the hospital soon again." That afternoon he was brought to the hospital, on a litter, suffering from a bad gunshot wound of his left forearm—no doubt self-inflicted. I said to him: "What a fool and a coward you are! However, I will attend to you and give you a good arm"; this I did in four weeks.

A few days later a young colored soldier, whom I happened to know was one of a draft of soldiers of the 24th U. S. Infantry (who were to leave the following day for the firing line) came to the hospital with the top of his left index finger off, and informed me he "met with an accident" when cleaning his gun. I said: "You are armed with Krag Jorgeson rifle, which is a long weapon. I know how 'the accident' happened. You put the end of that finger at the muzzle of the rifle and then pulled the trigger with your right hand. You did it so you would not have to accompany the draft tomorrow." Of course, I had to send him to "quarters". In five days the wound was healed so I discharged him to duty, saying, "The next time you are on a draft, don't be a coward but do your duty as a soldier." Practically no other soldiers ever see these accidents, as such slackers don't want witnesses to self-inflicted wounds.

In a few weeks, this same colored soldier left town with a draft and he was one of the first casualties to return in a few days, having suffered a gunshot wound through the calf of his right leg. Fortunately, no bones were broken. He made a great point of informing me that he "was shot by the enemy" and the way he talked he seemed to think he was a hero. He proved himself a good soldier thereafter.

73 HENRY STREET

A NEW APPROACH TO THE REHABILITATION OF PATIENTS SUFFERING FROM WAR NEUROSIS

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The treatment of war neurosis, and of psychoneurosis in general, has in the past been regarded mainly as a psychological problem. But a more effective approach is needed which would combine psychology with the study and treatment of the patient's physiology and blood chemistry.

Since the beginning of Selective Service, and in the capacity of a medical examiner on a draft board, I have witnessed the rejection of many otherwise healthy young men because of symptoms of neurocirculatory asthenia. Every draftee thus diagnosed is considered unfit for military service, is classified 4-F, and lost to active combat duty.

Consequently, I examined a number of men who had been rejected on account of neurocirculatory asthenia in order to study their blood chemistry—a method which suggested itself in the continuation of previous research in the field of blood chemistry (1). It was felt that by this method of approach a better insight into the prevailing disability could be obtained. A fasting blood sugar and a blood uric acid test were performed in all cases; but the result indicated no marked deviation from the figures of normal blood sugar and uric acid, as quoted in the textbooks. The carbon dioxide combining power was also checked, by the simple test known as Van Slyke and Cullen's method, and found to deviate from the normal. In the interpretation of the results from this test it was noted that the figures for normal carbon dioxide combining power, as listed in the laboratory textbooks, allow too great a span, ranging from forty-eight to sixty volumes percent. It seems probable that these figures were obtained from individuals whose diet had consistently included a more or less generous amount of citrus fruits. Such a diet unfailingly raises the level of the carbon dioxide combining power of the blood to such an extent that fallacious results become unavoidable. For this reason it became necessary to interpret the results of Van Slyke and Cullen's method on the basis of corrected figures for a normal carbon dioxide combining power.

It is difficult to express what is meant by an acid or an alkaline condition of the blood, but Van Slyke and Cullen's method comes nearest to giving an indication as to whether the blood tends towards the acid or the alkaline side of the balance. On the strength of such an analysis, treatment for the correction of the imbalance can be attempted. At the same time it must be remembered that the pH of the blood cannot readily be changed, and that by reference to acidity and alkalinity a change in the pH is not necessarily referred to.

The blood balance of highly emotional and temperamental persons with a tendency towards neurosis or neurasthenia is easily affected. On the slightest provocation their system builds up an excess of lactic acid which it is unable to neutralize later on. The family background and personal history of such patients should be taken into consideration, and in a great number of cases it will be found that the patient has grown up under conditions which tended to make him fatigued, either physically or emotionally. Such cases should be judged from a physiological viewpoint rather than treated primarily as psychological problems. The patients should be given an opportunity to become physiologically rehabilitated. Consequently, and with the help of psychological treatment, the final steps towards readjustment will have a greater chance of success.

A typical picture of the symptoms produced by alkalosis is that of tetany. It is marked by sudden, intermittent contractions of certain limited groups of muscles of the face, the hands, the arms and legs. Numbness, paresthesia or pain in the affected parts are not rare, but no disturbance of consciousness occurs. Alkalosis tends to diminish the amount of calcium in ionc form contained in the blood and in this manner it predisposes to tetany. (2) These symptoms of tetany are typical—to a greater or lesser degree—of many of the cases in which a diagnosis of neurasthenia of psychoneurosis has led to rejection or discharge by the armed forces. It is, therefore, not beyond reason to conclude that war neurosis is closely related to alkalosis and that, therefore, psychiatric treatments alone cannot achieve the desired results. In the first place, the blood balance of such patients should be brought back to normal through treatment designed to relieve the blood of its alkalosis.

Examination of the blood of a considerable number of men who had entered the Service as perfectly healthy individuals, but later had been discharged as neurasthenics, also revealed a high carbon dioxide combining power. It should be remembered that fear is one of the main causes for bringing about an imbalance in the blood chemistry. A soldier preparing for combat or going into battle lives in a permanent state of emotional upheaval and of fear. As a consequence, his organism consumes an excessive amount of adrenalin.

Since the beginning of the war many cases of psychoneurosis of flyers have been reported. Among those who ascend daily into high altitudes, such a condition may be attributed to hyperventilation which causes an excessive amount of carbon dioxide to be retained in the blood. Immediate serious damage can be prevented through the administration of considerable doses of oxygen. Yet, this measure cannot completely remedy or relieve the after-effects of hyperventilation. Still less will the simple expedient of any oxygen mask counterbalance the physiological consequences of the emotions of excitement and fear, which the aviator is bound to undergo. A greater amount of adrenalin will have been consumed by his system than it is able to replace. If the endocrine glands of these flyers are not able to reestabish their normal functions as soon as the men return to the ground, the condition of alkalosis will be perpetuated and the aviators will become subject to psychoneurosis for a protracted period. In young men the recharging of the glands which control this condition will proceed without delay. But with advancing years the glandular balance becomes more fixed and the reestablishment of normal function grows accordingly more difficult. For this reason, men thirty-five years of age are too old to become flyers.

It has long been established that physical fatigue will cause a deposit of lactic acid in the tissues, and it is now commonly recognized that emotional fatigue will produce a similar condition. For the protection of the blood such a deposit of acid in the tissues must either be neutralized or alkalinized. The alkali reserve is called upon and more alkali is forced into the blood in order to protect it against the acid invader, leaving it in a highly alkaline state. This alkalinity is by no means beneficial, but must rather be regarded as merely protective and even detrimental.

One of the methods of rehabilitation of soldiers who have been diagnosed as psychoneurotics is to give them sunshine and complete rest. The abundance of oxygen and positively charged ions to which they will thus be exposed will help to offset the excessive amount of carbon dioxide contained in their blood and bring it back to a better balance. Through rest the lactic acid deposited firmly in their tissues will tend to become more volatile and consequently it will be more likely to disappear. The alkali which had been forced into the blood for the protection of its chemical balance will thereafter return to its own proper place in the reserve.

The reports of three cases will be submitted, which are representative of different types of persons, rejected or discharged by the Medical Department of the United States Armed Services. Only those points which are of significance in view of the problem under discussion have been mentioned.

Case Reports

Case I.—Neurocirculatory asthenia. H.M., twenty-seven years old, white, single.

Family history.—The patient did not know much about his father, as his parents were separated when he was still a young boy. His mother had been dependent upon him for the greater part of her livelihood, but had always chided him for not being as efficient as other young men in similar situations.

Past history.—The patient stated that he had been a "nervous child," and at school he was unable to participate in competitive sports without becoming emotionally upset and physically fatigued. He stated that he had always suffered from an inferiority complex. Since coming to California at the age of twenty-four he had been unable to "find himself." He took up typing and became a rapid typist; but when he found a job and had to take dictation from his employer, he felt that the work was too strenuous and had to give it up. At the time of examination, his main complaint was that he was suffering from dizzy spells and from a constant feeling of fatigue. He also stated that he did not sleep well and was always worried about what was to become of him.

He was rejected by the Induction Board, with a diagnosis of neurocirculatory asthenia.

Physical examination.—The patient was well developed and nourished. His teeth had several large cavities. Heart and lungs were normal, but the pulse

rate was constantly rapid (94 to 118). His hands showed fine tremor and were always perspiring. Reflexes were exaggerated. The patient talked rather rapidly, but intelligently.

Blood chemistry.—This showed results within normal limits, with the exception of carbon dioxide combining power which was sixty-one volumes percent. The patient was given calcium intravenously, also injections of a combination of suprarenal cortex and antuitrin S, and an antacid diet was prescribed.

After a few months of treatment, the physical and emotional symptoms disappeared. The patient passed a Civil Service examination with high grades and took a position with the city government. He has been performing his work satisfactorily and without the feeling of undue emotional strain.

CASE II.—Neurasthenia. M.S., twenty years old, white, single.

Family history.—His father is a successful businessman; his mother is the type which consults doctors constantly and for the slightest ailment.

Past history.—The patient stated that he had had jaundice when he was three years old, and at the age of ten he suffered from "glandular fever" and had to stay in bed for a period of three months. He started to work in his father's business, but did not think that he was "fitted for that kind of work." He did not know what kind of work he would be fitted for.

He was inducted into the army, served overseas, but was often hospitalized, although he was not considered a malingerer. His main complaints, while in the hospital, were fatigue, indigestion and insomnia. He said that he was constantly short of breath. He thought he ate too much because his stomach "rises up and down with discomfort" when he swallowed. He was in the army for about two years, and was discharged with a diagnosis of neurasthenia.

Physical examination.—The patient was well developed and nourished. Heart and lungs were normal, the skin evidenced dermographia, and the reflexes were exaggerated. Basal metabolic rate was −22. X rays of lungs revealed a few old, calcified glands; of abdomen, calcification of several mesenteric glands.

Blood chemistry.—Normal, except for carbon dioxide combining power of 67.1 volumes percent.

For a time the patient was given thyroid by mouth, then calcium by mouth. He was also given injections of a combination of suprarenal cortex and antuitrin S, and was placed on an antacid diet. After six weeks of treatment he showed definite signs of improvement. He is now working permanently. All symptoms are greatly alleviated, and the patient is feeling well.

CASE III.—War neurosis. H.L., twenty-nine years old, white, married, no children. His family history was not revealed.

Past history.—Chronic bronchial asthma. The patient was a very sensitive and introspective type of person. Otherwise his past history was not relevant.

The patient was so anxious to enter the Service, that he waived all disabilities and accepted a commission. He was sent to a combat area where he remained for a few months without being wounded, but became emotionally upset and was sent back to the United States for hospitalization. Clinical symptoms were asthma and insomnia. The diagnosis was war neurosis.

Physical examination.—Fluoroscopic examination of heart and lungs revealed the arch of the aorta increased in width. X ray of lungs showed peribronchial thickenings. An excessive amount of indican was found in the urine. Blood pressure was 156/106, and the patient said that prior to entry into the Service it was definitely much lower, especially the diastolic.

Blood chemistry.—Uric acid: 4.0; carbon dioxide combining power: seventy-two volumes percent.

The patient was given calcium by mouth, injections of a combination of suprarenal cortex with some parathyroid extract, and an occasional dose of phenobarbital for relaxation. He was placed on an antacid diet. He responded favorably to this therapy and is now being discharged from the hospital.

It is by no means my intention to claim that all cases of psychopathic or psychiatric abnormalities are the result of alkalosis. In the course of long years of practice, however, the conclusion became unavoidable that a great number of persons with a highly emotional background, when forced to work physically and stimulated emotionally until they were fatigued, would, upon examination of their blood chemistry, show definite signs of alkalosis. This condition is brought about by: 1, deposit of lactic acid in the tissues; 2, diminution of the amount of calcium in the blood, and 3, hyperventilation. Each case has to be treated individually, as the ability to readjust the blood balance and the time required for this process is subject to considerable variations.

An antacid diet eliminates all highly protein meats as well as raw vegetables and citrus fruits, for citrus fruits are acid, have no alkali ash and can only become alkaline by the addition of an alkali from the reserve. Experiments carried out by the author and his associates have shown conclusively that an individual would present within approximately seventy-two hours a case of extreme alkalosis with all of its disagreeable symptoms, if the amount of calories used per diem were administered exclusively in the form of citrus fruits. Therefore, whenever vitamin C constitutes an important part of the therapy prescribed to overcome a deficiency, it is advisable to administer vitamin C tablets or capsules instead of citrus fruit.

This antacid diet permits the blood to rid itself of its detrimental alkalinity, allowing the excessive alkali to return to the alkali reserve. In case of an endocrine imbalance, the glands which may have become fatigued through excessive drain can be restored to normal activity by the administration of a combination of glandular extracts.

The rehabilitation of men discharged from the Service with a diagnosis of neurocirculatory asthenia or neurasthenia could be more easily accomplished if a proper evaluation of their blood chemistry was taken into consideration, with special reference to carbon dioxide combining power. In many cases the physiological treatment of alkalosis will prove of great help in bringing patients, suffering from war neurosis, back to a fuller adjustment.

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Editorials

Penicillin Treatment of War Wounds

War Memorandum No. 12 of the Medical Research Council, on "The Use of Penicillin in Treating War Wounds," contains instructions prepared by the Penicillin Clinical Trials Committee on how to use penicillin in various types of wounds. The use of the calcium salt of penicillin for local application is advised, because it is more stable than the sodium salt which is now being used mainly for systemic administration. The use of the calcium salt for muscular injection is considered inadvisable, as in animal experimentation local necrosis has been observed.

In England the calcium and sodium salts in either powder or tablet form are being used, but the tablets are preferred, as weighing is thus dispensed with and aseptic handling is easier than with powders. For local application penicillin is used in either powder form or as a cream. To obtain a fine powder, sulfanilamide containing five percent of light magnesium oxide is used as a diluent. Various concentrations from 500 to 5,000 units of penicillin per gram of powder are being used; the lower strengths for burns and the more concentrated for wound prophylaxis.

In treating burns and superficial wounds the penicillin in an ointment base is preferred, as in this way the penicillin is liberated more slowly. Various formulæ are give for creams or ointments but it is emphasized that these preparations are not stable and should be used within a week after preparation.

One important factor which has been rightly emphasized is that adequate surgical treatment should not be neglected, even when penicillin is used. This is true for soft tissue wounds, gas gangrene and fractures.

Much information contained in this excellent pamphlet cannot be gone into in a short editorial, but one important point brought out is that in certain conditions the use of penicillin in wounds has not been successful. It may be that wounds have been closed too tightly, that stitches have been removed too soon, and that sometimes too much fluid has been instilled into the wound which has kept the surfaces apart. In some cases the material has been washed away by the fluid and it is believed that the bacteriostatic action of a single application of penicillin may not be sufficiently protracted to be successful. In other instances the edges of the wound have been approximated with too great tension to the skin which may have resulted from edema or loss of skin in the area involved. It is found that the open treatment of a wound with penicillin has a tendency to reduce edema so that in a few days it has been possible to close wounds whose edges at first could not be approximated.

The Committee warns against the casual use of penicillin. It is their belief that a bacteriological diagnosis should be made before treatment and penicillin used only in those cases where it seems suitable. This would be rather difficult in most instances. It is also stated that in order to follow the results of treatment cultures should be made from time to time. This is all very well but it does not seem to us to be practicable.

We hope the time will come in the near future when penicillin will be more readily available and can be used more freely, for we believe that it is the greatest single therapeutic drug at our disposal.

The necessity for economy in the use of penicillin on account of its scarcity is stressed and it is pointed out that local treatment with penicillin is much more economical than systemic and should be used whenever possible. Ever increasing quantities are being produced in this country and it is expected penicillin will become more widely available soon.

Hallucinations and Genius

Hallucinations are fairly common in sane persons, particularly among poets, philosophers and religious mystics. Geniuses are often subject to hallucinations, auditory and visual, and, it has been asserted, are frequently not of sound mind or are subject to temporary mania. While cannabis indica, mescal, opium and the bromides often produce hallucinations, is it not possible that these drugs do not produce hallucinations, but merely bring out inherent individual defects or characteristics? There is difference of opinion in regard to this and the matter has been argued about for generations.

DeQuincey's account of his opium visions are literature. Coleridge was a drug addict and wrote some great poetry when under the influence. Baudelaire wrote when his brain was steeped in or stimulated by hashish, or can it be that his mind was awakened to action by the narcotic? It is perhaps more reasonable to assume that the drug awoke something in the unconscious mind which without its employment would have remained dormant. Some of D. H. Lawrence's flights of imagination might have never seen the light of day if his mind had not been under the influence of mescal.

The list of those who have written and to a lesser extent those who did great things when inhibitions had been removed for a time by a narcotic, can be lengthened almost indefinitely. Inventive geniuses are not so prone to hallucinations as creative geniuses. In any event, even to so well balanced and sound a judge as

Thomas Huxley, most geniuses are not quite normal, while some of them are really freaks.

If psychotics are born not made, perhaps many geniuses may be put in the psychotic category, and because of an abnormal feature in their mental makeup are peculiarly susceptible to the effects of a narcotic. It may be argued, plausibly, that if some geniuses had not been thus susceptible many great works of imagination would have been lost to the world. This country possessed one of the supreme examples of a psychotic genius in Edgar Allan Poe, who penetrated to some of "the dark unfathomed caves" of his unconscious mind by the use of alcohol; that is, the drug abolished temporarily all conventional inhibitions and the creatures of his morbid fancy were unloosed.

If it were possible to cure the psychoses of genius, it is a question whether it would be worthwhile. It must be borne in mind that genius has done wonderful things for the world, and is it not possible that if the psychotic genius had been rid of his psychosis he might have done nothing out of the common. Hallucinations may be among the hall-marks of genius and may be incited or brought into action by what is commonly called dope.

Diphtheria Antitoxin

Immunization, introduced in a single instance by Jenner, developed into a science, through the discovery by Behring and Kitasato of specific antitoxins for the prevention and treatment of diphtheria and tetanus, and their preparation and standardization. Inoculation against smallpox, providing partial immunity from the disease, was known in the Near and Far East from time immemorial and was introduced into the West by Lady Wortley Montague. But this method conferred only partial immunity and fell into disuse after Jenner's discovery. The possibility of serum therapy was revealed by the success of the investigations of Behring and Kitasato, since which time the course of investigations into the question has fluctuated, and it is a fact that immunology "as yet is not an exact science."

However, diphtheria antitoxin has proved its worth. The most recent preparation is that which has been enzyme treated, in which not only have inert proteins been removed but the antitoxin proteins themselves have been split into active and inert fractions. It is asserted that from most aspects this form of antitoxin surpasses in potency, but is absorbed rapidly, disappears from the body slowly, and has less tendency to cause serum reactions or sensitization.

Laboratory experiments have shown there are wide differences between strains of C. diphtheriæ in respect to toxigenicity and virulence, and these variations may explain why antitoxin is more effective in some cases than in others. The question has been asked, is antitoxin less effective, unit for unit, today than before the introduction of refined serum, and has it become qualitatively different since the early days of serum therapy?

On the whole, it would seem that the new form of antitoxin fulfills its purpose satisfactorily. Variations in the infecting strain, in the patient's susceptibility, and in some hypothetical "avidity" factor in antitoxin, may explain some ineffective results of the antitoxin now used, but the personal equation, the patient's susceptibility, should always be considered.

Mental Health

Health of the mind is of as great importance as health of the body. The increasing tempo of life, made possible by the advances of science, is producing breakdown and overstrain, and in these days of nervous tension, latent maladjustments, comparatively unimportant in ordinary times, are likely to become grave mental disorders. Mental disorders of a more or less serious nature are prevalent in all civilized countries and constitute a menace in some.

A sinister feature is the increase of mental defectives. Delinquency proceeds from mental deficiency, and important causes of delinquent behavior are poor training, personality maladjustments, intellectual dullness, deprivation of reasonable outlooks, lack of reasonable affection from parents and environmental factors. It is therefore suggested that mental health training should begin at home. Public health education should be carried out through a well organized mental health service with the object of giving parents a better understanding of the causes of delinquent behavior, including the contribution made by their own emotional attitude. Parents should be taught to seek advice from a psychiatric clinic as soon as the first signs of delinquency occur; in fact, the parents themselves, for the most part, should be so educated as to be able to act as wise guardians and instructors of their children. Home life is the crux of the problem. Child guidance clinics should be established and psychologists appointed to furnish advice in regard to educational programs and to examine and control the education of backward children.

It should be borne in mind that mental and physical health are one and must be dealt with as such. Again, home, school, workshop and playing field are interdependent and their influence should be coordinated as far as is possible, for the reason that one or another of these factors may by its failure impede or wreck success. It is emphasized that all education concerning mental health should be directed towards the normal rather than the pathological. The aim should be to implant and foster a sane attitude towards mental sickness and never to inspire fear. In this endeavor psychotherapy is of great value.

News Items

International College of Surgeons.—The ninth annual assembly of the International College of Surgeons will be held in Philadelphia, under the sponsorship of the United States Chapter, on October 3d, 4th, and 5th, with headquarters at the Benjamin Franklin Hotel. The program will be devoted to problems of war rehabilitation and civilian surgery. Eminent surgeons have been invited to attend and present papers pertinent to surgery in their particular field of endeavor. Dr. Thomas A. Shallow, of Philadelphia, is president of the chapter and Dr. Rudolph Jaeger is president-elect. Dr. Jaeger is also general chairman of the committee of arrangements. The medical profession is invited to attend all the sessions of the assembly.

Floating Hospitals in Convoy Escort.—It is announced that floating hospitals are now going to sea as part of regular convoy escorts. These rescue ships contain bunks for fifty-seven passengers, are equipped with hospital facilities, including operating table, dispensary and x ray machines, with a doctor in charge. Thus, they will save many men the ordeal of long hours at sea without adequate medical attention. They are manned by seven officers and one hundred men.

National Medical Association.—The fiftieth annual meeting of the National Medical Association, Inc. will be held in St. Louis, Mo., August 14th to 18th, under the presidency of Dr. T. M. Smith, of Chicago. Dr. John T. Givens, of Norfolk, Va., is general secretary; Dr. W. G. Alexander, of Orange, N. J., is chairman of the board of trustees, and Dr. A. C. Terrence, of Opelousas, La., is chairman of the publicity committee.

Medical and Surgical Relief for India.—Dr. Joseph P. Hoguet, medical director of the Medical and Surgical Relief Committee of America, has announced that a donation of one hundred thousand atabrine tablets, valued at $1500, were sent on May 24th to the Friends Ambulance Unit in Calcutta, to alleviate the suffering of malaria-stricken victims among the civilian and military population in India. Dr. Hoguet stated that during the past month $5,100 worth of drugs—sulfapyridine, sulfaguanidine and atabrine tablets—have been sent to India.

Strittmatter Award.—The twenty-first annual Strittmatter Award of the Philadelphia County Medical Society was conferred upon Dr. Edward A. Strecker for the year 1943, at a meeting of the society held on May 24th. The award consisted of a gold medal and scroll on which appeared the following citation: "In recognition of his distinguished service in the field of psychiatry and mental hygiene, and his unselfish devotion to the highest ideals of the profession as a physician, teacher, author, and consultant in civilian and military medicine."

Dr. Trask Honored Posthumously.—A Liberty ship has been named in honor of Dr. James D. Trask, one of the leaders in the fight against infantile paralysis in America. Dr. Trask died in Chicago on May 24, 1942. The May 1944 number of the *Yale Journal of Biology and Medicine* is dedicated to his memory.

Personal.—Dr. Roger Irving Lee, of Boston, Mass., was unanimously named president-elect of the American Medical Association at the annual meeting held in Chicago.

Dr. George Dock, of Pasadena, Calif., famous physician and medical educator, was awarded the distinguished service medal of the American Medical Association at the annual meeting.

Dr. H. Houston Merritt, associate professor of neurology, Harvard Medical School, has been appointed professor of clinical neurology, College of Physicians and Surgeons, Columbia University. He has also been appointed chief of the division of neuropsychiatry of Montefiore Hospital, succeeding Dr. S. Philip Goodhart who is retiring after thirty-one years of service. Dr. Goodhart has been named consultant in the division of neuropsychiatry.

Dr. Henry G. Bugbee, of New York, has been awarded the Keyes Memorial Medal of the American Association of Genitourinary Surgeons.

Dr. Warren F. Draper, Deputy Surgeon General, U.S. Public Health Service, has been assigned to duty with the Army in the grade of Brigadier General. His duties will be concerned with public health problems in occupied countries.

Dr. John Harland Paul, for three years in charge of malaria control in Haiti, has been appointed director of the bureau of malaria control of the Florida State Board of Health.

Dr. James A. Miller, professor of clinical medicine, Columbia University College of Physicians and Surgeons, has been awarded the Trudeau Medal for meritorious achievement in the prevention and treatment of tuberculosis.

Dr. Walter Clarke, clinical professor of public health practice at the Harvard School of Public Health and executive director of the American Social Hygiene Association, conducted a series of lectures and seminars on venereal disease control at the Harvard School of Public Health, May 30th to June 15th.

Dr. Henry C. Sherman has resigned as chief of the Bureau of Human Nutrition and Home Economics of the U.S. Department of Agriculture and will return to the faculty of Columbia University. He will be succeeded at the Bureau by Dr. Hazel K. Stiebeling, now assistant chief.

Dr. Hugh H. Smith has been appointed regional director for the United States of the International Health Division of the Rockefeller Foundation. He will succeed Dr. John A. Ferrell who will become medical director of the John and Mary R. Markle Foundation.

Miss Marian G. Randall, a leader in the field of public health nursing, has been appointed director of the Henry Street Visiting Nurse Service, New York. This appointment became effective on June 1st.

Commander James J. Sapero, Medical Corps, U.S. Navy, has been awarded the Gorgas Medal and prize for 1944 by the Association of Military Surgeons for "outstanding service in the sanitary field in the Southwest Pacific area."

Captain L. Kraeer Ferguson, Medical Corps, U.S. Navy, delivered the Annual DaCosta Oration at a meeting of the Philadelphia County Medical Society, held on May 24th. His subject was "Surgical Experiences in Battle Casualties".

Air Evacuation of War Casualties.—Air evacuation of American sick, wounded and injured personnel, with only eleven deaths in flight among the 173,527 transported by plane in 1943, has been announced by the United States Army Air Forces Medical Services. During the year the Twelfth Air Force alone, operating in a Mediterranean theater, carried 58,479 sick, wounded, and injured patients for a total distance of 16,491,266 miles in the course of 131,762 hours, with only one death in flight, despite the fact that half of the evacuees were litter patients. With the total number of deaths in flight listed at eleven, there was an average of one death for every 15,775 patients evacuated. A considerable number of these cases were so serious that other means of transportation or delay in their removal to base hospitals would have added materially to the death toll.

"Starred" Men of Science.—In the seventh edition of *American Men of Science,* nine professors from the University of Chicago have been designated "starred" men of science and listed with the top one thousand scientists in the United States. These are Dr. Oswald H. Robertson, professor of pathology and medicine; Dr. Wilton M. Krogman, associate professor of anthropology; Dr. Carey Croneis, and Dr. William C. Krumbein, professor and assistant professor of geology, respectively; Dr. William Bloom, chairman of the department of anatomy; Dr. Warren C. Johnson, professor of chemistry; Dr. Franklin C. McLean, professor of pathological physiology, now on leave for military service; Dr. Thomas Park, associate professor of zoology, and Dr. William H. Zachariasen, associate professor of physics.

Grant to Stanford University School of Health.—Realizing the acute need for physical therapy personnel, partly resulting from the war, The National Foundation for Infantile Paralysis has just made a two-year grant totaling $34,080 to the Stanford University School of Health (Women) at Stanford University, Calif. This grant, which is in addition to other funds given by the National Foundation to this university, is for the two-fold purpose of strengthening the physical therapy technicians' school and of preparing syllabi and text materials for the use of physical therapy instructors and their students. Under this program selected students will be provided specialized training designed to prepare them to become skilled teachers of physical therapy.

Tribute to Dr. Naffziger.—The May 1944 issue of the *Journal of Nervous and Mental Disease* is a special number dedicated to Dr. Howard C. Naffziger, professor of surgery, University of California Medical School, by the members of the staff of the University on the occasion of his sixtieth birthday, May 6, 1944. The issue includes three salutatory addresses, by Major General Norman T. Kirk, Surgeon General, U.S. Army, Robert G. Sproul, president, University of California, and Dr. Francis Scott Smyth, dean of the University of California Medical School. Dr. Foster Kennedy presents an appreciation of the work of Dr. Naffziger in the fields of medical education and neurosurgery, and Dr. Bernard Sachs contributes an article on the early days of neurosurgery in America. In addition, there are forty-three articles on various phases of neurosurgery and neurological problems.

Biological Photographic Association.—The fourteenth annual meeting of the Biological Photographic Association, Inc. will be held in Binghamton, N.Y., September 7th to 9th, under the presidency of Ferdinand R. Harding, president of the Children's Hospital, Boston, Mass. Papers will be presented by experts in the fields of still and motion picture photography, photomicrography, etc. Round-table discussions will be scheduled for the exchange of ideas and methods. The Biological Photographic Association is a nonprofit organization for the study of photography as applied to medicine, dentistry, and the biological and natural sciences. Its members are scientific photographers, scientists who use photography in their work, and amateurs with a deep interest in biological and medical photography.

Fellowships in Health Education.—The National Foundation for Infantile Paralysis has set aside the sum of $50,000 for fellowships in health education in order to aid in the fight against poliomyelitis. The program has been developed in cooperation with the United States Public Health Service. For further information in regard to these fellowships, write to the National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, N.Y., and applications may be obtained from the Office of the Surgeon General, United States Public Health Service, Washington, D.C. Applications must be in the office of the Surgeon General not later than August 15th.

American Board of Obstetrics and Gygnecology.—The annual meeting of the Board was held in Pittsburgh, Pa., June 7th to June 13th, at which time ninety-three candidates were certified. A number of changes in Board regulations and requirements were put into effect designed to aid civilian candidates as well as those in the service. Among these is the waiver, temporarily, of the requirement for men in the Army or Navy, upon a statement of intention to join promptly upon return to civilian practice. The Board also accepted, for the duration, a period of nine months as an academic year in satisfying the requirement for certain years of training. Applications and bulletins of detailed information regarding the Board requirements will be sent upon request to the secretary's office, 1015 Highland Building, Pittsburgh 6, Pa. Applications must be in the office of the secretary by November 15, 1944.

Grants in Aid of Sugar Research.—Dr. Robert C. Hockett, scientific director of the Sugar Research Foundation, has announced grants totaling $104,100 for the purpose of pursuing further studies on various phases of sugar research. These grants were distributed as follows: Dr. Ancel B. Keys, professor of physiology at the University of Minnesota, $36,000; Dr. Julian A. Boyd, associate professor of pediatrics at Iowa State University, $21,500; Dr. Frederick J. Stare, School of Medicine and Public Health, and Dr. A. Leroy Johnson, School of Dental Medicine, both of Harvard University, $25,000; Dr. Melville A. Wolfrom, professor of chemistry, Ohio State University, $18,000, and Dr. Carl Neuberg, professor of chemistry, Washington Square College, New York, $3,600. Among the topics to be investigated are the influence of sugar in the diet on vitamin requirements; diet in relation to prevention of dental caries; medical use of molasses, particularly in relation to diabetes, and vitamin C synthesis.

PUTTING TEETH INTO THE WORKMEN'S COMPENSATION LAW

WLADIMIR ELIASBERG
New York, N. Y.

The best law is ineffective if it is interpreted differently from the benevolent intention of the legislature. It is not always necessary to pass a new law or set up a new enforcement agency to raise the effectiveness of the already existing law. Instead of this, keep an eye on the chafings, understand where the harness rubs, and the mare will again pull the wagon for a while.

The Workmen's Compensation Law of the State of New York and the Rules and Procedures of the Industrial Board, now in existence and amended during twenty-five years, were written in a definitely liberal spirit. Yet the purview of this law has not been recognized by all those called upon to collaborate. There are, in this field too, quite a few people who, as the saying goes, "agree in principle but carry out differently."

The medical experts are just as limited in their viewpoints as any human being. They have their prejudices, the famous *idola specus et fori* of Francis Bacon. May it be stated here that I am not referring to differences in intelligence, reliability or training of experts, but to their philosophy, their general outlook on life and their special hunting ground of experience.

If we are asked whether a disease or a pathological occurrence can be connected with certain other occurrences and, if so, with what degree of probability, what is the meaning of the word probability in such a question? It cannot be the idea that the experts should discuss the mathematical *a priori* frequency of the event which, on the contrary, is only the frame in which we will have to fill the canvass. Nor is it unknown to the jury, the judges and counsel for the defendent or the plaintiff that the expert's knowledge is not born from the loins of truth herself. In other words, much as the expert's intuitions and convictions may represent the shorthand of his many years of experience, he should not discuss degrees of authoritative belief nor, on the other hand, mere figures of frequency. Whenever the human mind sets out to search the social world, the suitable psychological procedures are those of estimate of comparison, evaluation, scaling and rating. What then is the use of statistics and probability in the practice of the expert? We have to attempt to subordinate the case at hand to suitable collectives whose mathematical probabilities are known and have to apply all the statistical sources of knowledge but in doing so we still, as I just said, are not dealing with the canvass but the frame. A traumatic neurosis should not be diagnosed because there is a certain probability and it is now the turn of that disease. In short, in the individual case we want truth not probability. The expert's opinion should be built in such a manner as to arrive at conclusive proof or, at least, to show for what reasons one hypothesis is better than another. Thus the expert's opinion compares closely with the circumstantial evidence of the jurist.

While this is the ideal form of the expert's opinions, we see in practice that the physician who has been working in large hospitals will be induced to rely upon statistics exclusively, while the family doctor will neglect statistical data too much.

Within the compass of the Workmen's Compensation Act, the expert has to collaborate with medical laymen, comprising lawyers and nonlawyers: there is a nonpartisan group of lawyers, i.e., the referee or the judges; there is, on the other hand, a distinctly partisan lawyer's group: counsel for both parties, and there is a group of more or less interested laymen in both medical and judicial matters; these are the jurors and the witnesses. In those frequent cases when the opinions of the experts seem to contest one another, it is quaint how quickly they blow up and slop over and how the judge places his own layman's understanding before the specialist's or, still worse, is prejudiced in favor of the one expert and pushes aside the others. The tenseness of the atmosphere in the courtroom often increases when counsel takes to cross-examining. A heckling hither and thither sets in. In these cross-examinations there is a constant confusion of statistical generalities and the peculiarities of the case in hand. The expert is not always the better swordsman in the parades of theories, ruses and logical dodgings.

And he is not beyond temptation because he often cooperates too closely with the party from which he holds a retainer. As to this point, the procedure could be improved if the boards, the referees and the courts would keep lists of reliable and recognized experts from which the parties may choose their men. At present, instead of this, the parties mostly choose their experts according to local boss-rule schemes.[1] There are certain socalled experts with teeming anterooms and in these years the newspapers have been reporting dirty stories about fee-splitting, kick-backs and shake-downs paid and received by doctors.

One would like our own Workmen's Compensation Board to be more curious about what is going on in Workmen's Compensation and, at the same time, to be more eager to expose dirty business while there is still some merit in exposing it. Finally, the Board, if it has no authority of its own, should ask for a Moreland Commission to investigate the racket. Such measures of our own Board combined with court lists and certain procedural reforms, would greatly help to establish higher standards[2].

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1 Lloyd Paul Stryker in his valuable and, although published in 1932, unfortunately not outdated book in surveying certain reform proposals, rightly shows the difficulties and even disadvantages of the socalled official experts, i.e., those experts who are selected and called in by the courts instead of by the parties. However, no objection could be raised against the court analyzing the alleged qualifications of the experts, which is good practice in England. Our own suggestion is not necessarily that of a compulsory choice from the list, i.e., while the court may offer to the parties a list, the parties may still be free to reject it. However, if the expert is not chosen from the list, the court should doubly thoroughly analyze the qualifications.

After this article had been compiled, the valuable contribution by Edmund M. Morgan, *Suggested Remedy for Obstruction to Expert Testimony by Rules of Evidence*, became available. Morgan quotes the suggestions elaborated in the code of the American Law Institute. On the whole, these rules are in keeping with our own suggestions. See particularly rules 403, 404, and 405.

The opinion should be based on adequate grounds. In other words, the expert should not submit his opinion without giving, in language understandable to the jurors and the court, the factual material and the inferences. Experts in Germany and Austria have repeatedly claimed exemption from cross examination because such examination would be unworthy of their dignity. But the expert should not claim a divine position in court.

2 This article was written before the public hearing before Commissioner Stichman.

It may happen that the lay witness' report does not fit quite smoothly into the theory which the expert is pampering at the moment. The competence of the expert is demonstrated by his ability to evaluate and to make use of what the witnesses testify under oath. One must bear in mind that the expert is not the "superior" of the lay witness. The expert cannot possibly have experienced what the eyewitness saw. A theorist may "outwit" the visual phenomena. There are good reasons for the theory of the globular shape of the earth, notwithstanding the visual appearance to the contrary. But theory cannot give the lie to sensations or perceptions. It only denies the pretenses of that primitive theory which first originated on the basis of unverified perceptions.

The bone of contention often is found in those subjective nervous or neurotic conditions following accidents. Is it true that the company comes off better if it excludes the neuroses, without objective bases, from any and every insurance protection? It is not true, and for various reasons it is often impossible to write such exclusions into the policy. Neurotic or hysteric or even compulsion symptoms may prove, upon closer examination, to be organic conditions. Besides, in the Workmen's Compensation Act and the decisions thereof no standard of pre-morbid physical fitness to which an employee must conform has been prescribed. There can be no discriminating legislation against workmen inclined to nervous reactions, at least not in a democracy.

In the treatment of said neuroses the pessimists unfortunately are still holding their own. Fourteen years ago I reported on my experiences with group therapy in the book entitled: "The Challenge of Social Neuroses". Group therapy is apt to reap encouraging successes, especially if all those interested feel that the 'Doc' is not taking sides in that industrial struggle that darkens modern life. This therapy has to be dovetailed with lump payment settlement. *Physicians, general practitioners, as well as specialists should be trained in this up-to-date social psychological treatment and in the psychological bases of rendering expert opinions and in social economic problems in general.* State labor departments, unions, employers' organizations and last, but not least, medical organizations should collaborate in such post-graduate courses.

420 WEST END AVENUE

GENERAL GEORGE MILLER STERNBERG

An Appreciation

JEROME M. SCHNECK
Topeka, Kansas

(*Continued from page* 355)

The creation of the Army Medical School is probably the best known achievement of Sternberg while he was Surgeon General, and its foundation has been termed Sternberg's greatest monument" (74).

In addition to other duties and as a good example of his manifold activities reference can be made to his participation in the fight against the ever present anti-vivisection movement. This movement had been rising and falling in intensity, but evidence of its importance arose in 1900 when a third attempt was made by the anti-vivisectionists to pass a regulatory law through Congress. Senate Bill No. 34 was introduced before the fifty-sixth Congress by Senator Gallinger resulting in the demand by scientists for a public hearing. When the proponents and opponents of the bill appeared before the Senate Committee on February 21st, General Sternberg was among those offering testimony. Other famous persons were W. W. Keen, H. P. Bowditch, Bishop Lawrence, Mary Putnam Jacobi, William Welch, and William Osler (75).

Many additional achievements of Sternberg could be mentioned but it will be sufficient to list only a few. During his administration as Surgeon General there were formed the Army Nurse Corps and the Army Dental Corps. A well known hospital for tuberculosis patients was established at Fort Bayard and during the Spanish American War many general hospitals were organized. In 1898 Sternberg established the Typhoid Fever Board composed of Majors Walter Reed, Victor Clarence Vaughan, and Edward O. Shakespeare. In 1900 he established the Yellow Fever Commission and this has already been alluded to in greater detail.

Sternberg's publications deserve special mention. He was a prolific writer. In 1880 he translated Antoine Magnin's *Les Bactéries* (1878) from the French and in 1884 this book was enlarged and revised by the authors Magnin and Sternberg so that the final product was about 480 pages, including the 152 pages of Magnin's original work (76). In 1892 he completed his *Manual of Bacteriology* (77) which was a tremendous work of about nine hundred pages and many illustrations. By 1896 this manual was revised and published under the title, *A Textbook of Bacteriology* (78) and this contained many of his own photomicrographs. In his preface to his volume, Sternberg wrote: "For the benefit of students of medicine and others who do not care especially for the detailed descriptions of nonpathogenic bacteria and the extensive bibliography contained in the *Manual,* this *Textbook of Bacteriology* is now published" (79).

When Sternberg's textbook was published, Walter Reed wrote to him: "How an Army medical officer, in the midst of daily routine work, could have written so excellent and so exhaustive a work, I cannot understand. Besides reflecting the greatest credit on our Corps, it must always stand as a monument to your energy and ability" (80).

Sternberg created a Board for the Study of Tropical Diseases. It was he who directed that the facilities of the Library of the Surgeon General's Office be placed at the convenience of all medical officers engaged in literary research.

Other honors, briefly mentioned but nonetheless of great significance, were his attaining the presidency of

ıe American Medical Association and the American ublic Health Association. He received honorary egrees from the University of Michigan and Brown niversity. The Army's largest military hospital in the hilippines was named after him. He was a fellow, by ourtesy, of the Johns Hopkins University and after is retirement he was professor of preventive medicine : George Washington University. He was a charter ıember of the National Association for the study and revention of Tuberculosis and president of the Society or the Prevention of Tuberculosis in the District of olumbia, from 1908-1915 (81).

Following his retirement from the Army in 1902, ternberg was by no means inactive. Quite the con- ary, he pursued a busy career still further, but suffice to mention that he delivered many public lectures n sanitation and hygiene for he believed that a doctor ust popularize knowledge of communicable diseases. [e spoke about the fallacy of the antivaccination ampaign and the need for higher standards in medical ducation. He also urged successfully that military ygiene be made a required subject at West Point.

On November 3, 1915, came the termination of a lorious life full of great achievement, honor and fame. [is entire existence is a symbol of sincere devotion to uty. On November 5, 1919, a monument to Sternberg as unveiled at Arlington National Cemetery.

In her tribute to her husband, Martha L. Sternberg aid: "The following pages have been written in the ncere hope that the life and work of General Stern- erg may serve as an inspiration to the present and ture generations of American physicians to achieve enown in the science of preventive medicine" (82).

In conclusion, it is worth quoting Sternberg's own emark about himself and this may very well have een the key to his success: "I do not remember that have ever been without some work ahead which I arnestly desired to complete, and my habit has always een to look forward and not backward and to lend hand" (83).

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Book Reviews

Neuroanatomy

The Anatomy of the Nervous System. From the standpoint of development and function. By STEPHEN WALTER RANSON, M.D., Ph.D., Chicago. Seventh edition, revised. With 408 illustrations, some in color. Philadelphia and London: W. B. Saunders Company, 1943. Pp. 520. Price $6.50.

The late Dr. Ranson obtained much of the material for this book while professor of neurology in the Northwestern University Medical School. The publishers say that "with his usual foresightedness" Dr. Ranson selected his former student and co-worker, Dr. Sam L. Clark, professor of anatomy at Vanderbilt University, to revise this edition and bring it up to date. To many students, the anatomy of the nervous system is difficult and endless in its ramifications. The author wished to make the dose more palatable by stressing embryology and comparative anatomy and function of nerve centers and pathways. The chapter on the sympathetic nervous system has been rewritten. First, the gross and microscopic anatomy are discussed, leaving until later "the autonomic system." The dorsal thalamus, always difficult to correlate with the higher cerebral centers, has been reconsidered in the light of the investigations of Walker.

Toward the end of the book some thirty pages are devoted to "a laboratory outline of neuroanatomy". This will be valuable to the student who for the first time is confronted with a sheep's brain, for example, and is told to "go ahead and dissect". Heretofore, it has been easy to destroy the material without finding out much about it. On page 466 ff., "clinical illustrations" are set down which enable the student to apply what he has learned, in making a diagnosis of actual conditions met with in the practice of medicine. One could do well with more cases than are here presented, for neurological conditions are often a puzzle in general practice.

If anyone will take the time and trouble to read and study this book with care, he will obtain an excellent working knowledge of the entire nervous system which is the "governor" of what is called in these days "psychosomatic medicine".

Industrial Ophthalmology

Industrial Ophthalmology. By HEDWIG S. KUHN, M.D. With 114 text illustrations, including two color plates. St. Louis: The C. V. Mosby Company, 1944. Pp. 294. Price $6.50.

With factories running three shifts every twenty-four hours, and with an ever-increasing number of new "hands" who may be both ignorant and careless in avoiding hazards to vision, this book comes as a timely and welcome expositor of eye health. In the preface, Dr. A. C. Snell, of Rochester, who has written wisely and well on many phases of ophthalmology, says that Dr. Kuhn is particularly well qualified as an authority because she has lived and worked for so many years in a great industrial center where eye "problems" are a part of her daily round. She is associated with the Department of Industrial Psychology at Purdue University where "research" is fostered and favored. As a result of the plan of action set up by the Section of Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolarynology, a Joint Committee of Industrial Ophthalmology now has a "program for industry." This can not become static or finished, however, because of the tremendous changes and improvements in the tools of industry; for each new tool brings new medical problems to be solved. An eye program for industry must include information about an employee's visual skills; i.e., acuity, muscle balance, visual performance at varying distances, and mental "reaction time" to meet a given emergency. Recent inventions lead to questions about the effects on eyes of radiation, welding and "flashes". There is also the rather confusing "epidemic keratoconjunctivitis" which is difficult for the average physician to differentiate from occupational ocular troubles which it simulates. The chapter on "Eye Protection" is one of the most cogent and practical in the book. It begins with a little story concerning a foreman who would have been blinded by molten metal but for his excellent goggles. In these days no man whose own work may be safe is allowed to move with eyes unprotected as he walks through the shop. This also applies to casual visitors. There is a list of some fifteen different kind of goggles, each to be used on a different "job"! This subject in itself is a big one upon which much time and effort has been spent to the great advantage of workers.

Nutritional Deficiencies in Neuropsychiatry

The Role of Nutritional Deficiency in Nervous and Mental Disease. Proceedings of the Association for Research in Nervous and Mental Disease. Editorial board: STANLEY COBB, M.D., chairman, EDWIN F. GILDEA, M.D., and HARRY M. ZIMMERMAN, M.D. With twenty-three illustrations and eight tables. Baltimore: The Williams and Wilkins Company, 1943. Pp. 215. Price $4.00.

This is Volume 22 of the Research Publications of the Association for Research in Nervous and Mental Disease, and is devoted to the rôle of nutritional deficiency in nervous and mental disease. The book is divided into two parts. Contributions from the fundamental sciences to the problem of nutritional deficiency, by well known authorities, are presented in the first part. Dr. George R. Cowgill reviews the physiological investigations which have been made in the science of nutrition and believes that further studies will disclose the essentially dietary origin of various lesions of the nervous system. Dr. C. A. Elvehjem discusses the relationship of enzymes to deficiency in which he points out that the relationship between the vitamin and the endocrine is indirect or obscure. Dr. George R. Minot's contribution emphasizes the fact that nutritive failure can result from factors other than an improper diet, such as disturbances of the gastrointestinal tract and disorders of internal metabolism. He concludes that adequate nutrition is one of the first lines of defense of this nation. Dr. Harold E. Himwich discusses the rôle of the vitamins in brain metabolism, and Dr. H. M. Zimmerman reviews the pathology of the vitamin B group deficiency, and the relation of vitamin A is discussed by Dr. S. B. Wolbach and Dr. O. A. Bessey. The effects of vitamin E deprivation in various laboratory animals are presented by Dr. A. M. Pappenheimer.

In part two, devoted to clinical aspects of the problem, the following papers are included: Symp-

oms and signs of thiamine deficiency, by Dr. Russell M. Wilder; Mental and neurological aspects of vitamin B complex deficiency, by Dr. W. H. Sebrell; Emotional disturbances in persons with pellagra, beriberi and associated deficiency states, by Dr. Tom D. Spies, Dr. John Bradley, Dr. Milton Rosenbaum, and Dr. John R. Knott; Multiple neuritis, by Dr. Maurice B. Strauss; Spectroscopy as applied to the study of phenylpyruvic oligophrenia, by Dr. K. Dobriner, Dr. C. P. Rhoads, and Dr. S. Lieberman; Pernicious anemia and allied disorders, by Dr. W. B. Castle; Psychiatric syndromes caused by nutritional deficiency, by Dr. Karl M. Bowman, and Dr. Herman Wortis, and Prevention of nutritive failure and its cure, by Dr. James S. McLester.

We believe that this book contains material which will be of value to the general practitioner.

Vitamins and Hormones

Vitamins and Hormones. Advances in Research and Applications. Edited by Robert S. Harris, associate professor of nutritional biochemistry, Massachusetts Institute of Technology, Cambridge, Mass., and Kenneth V. Thimann, associate professor of plant physiology, Harvard University, Cambridge, Mass. Volume I, with a foreword by E. V. McCollum, Johns Hopkins University, Baltimore, Maryland. New York: Academic Press, Inc., 1943. Pp. 452. Price $6.50.

The time is ripe for the founding of such a venture, since it is no longer possible for anyone to read sufficient of the current papers and the library files dealing with these two classes of substances to assimilate all the knowledge which has accumulated. We must increasingly depend upon our colleagues, who maintain mastery of specialized experimentation, to appraise for us the numerous contributions which they alone can interpret, sifting error from truth and assembling scattered data to make a connected account which places a body of related facts in proper perspective. This is the function of the new publication.

It is astonishing that we have progressed so far in so short a time in developing the chemistry and physiology of vitamins and hormones, their sources and the methods for their assay. The vistas of opportunity for further researches in many directions make it clear, that the future is full of promise. The earliest carefully conducted experiments which clearly demonstrated the existence of what are now known as vitamins were those of N. Lunin, a pupil of von Bunge, in Basel, in 1881. He used substances which he believed to be pure, and combined what Prout had, long before, distinguished as the saccharine, the oleaginous, and the albuminous principles, together with certain inorganic salts, to form his experimental diets. He observed that the rapid decline of his experimental animals on these diets could be arrested and a degree of normality reestablished by the provision of a small addendum of a natural food, whole milk. He correctly interpreted his observations to mean that there existed essential nutrients which had been hitherto unsuspected. Von Bunge gave wide publicity to his pupil's studies in his text-book of physiological chemistry. Pekelharing, in 1905, repeated in principle the experiments of Lunin and offered a like interpretation of the results. It was not until after the distinguished studies of Hopkins and Funk were published that vitamin research was launched upon its amazing journey.

In the case of the hormones there has never been any question that the demonstration by Bayliss and Startling, in 1902, of the existence of the chemical regulator, secretin, clearly places them as the fathers of the hormones. The vitamins and the hormones are the most fascinating substances which occupy the attention of physiologists and biochemists of today. The vitamins participate as components of catalysts which enable the more inert chemical substances, serving as raw materials for the fabrication of living tissues, to undergo the changes which come under the term metabolism. To their peculiar properties are due the fundamental processes of life. The balance and integration among the bewilderingly complex chemical processes of different tissues are in great measure controlled by the hormones. Physically, mentally, sexually and emotionally, we are largely the product of our hormones. The first volume of *Vitamins and Hormones* appears at a time when clinicians are cautiously attempting to apply both vitamins and hormones for the benefit of their patients. The future of preventive and of curative medicine is filled with promise.

Maternal Overprotection

Maternal Overprotection. By David M. Levy, M.D., psychiatrist. New York: Columbia University Press, 1943. Pp. 417. Price $4.50.

Every psychiatrist has long known that maternal overprotection has meant bad business for a lot of children. The evidence is so palpable that no one, as far as we know, has ever disputed the evils arising from this condition but never before have so many case histories been assembled and so carefully studied on this one particular subject. This study was made possible by the combined efforts of a group of workers in the Institute for Child Guidance in New York City.

The research was the result of careful investigations over a long period of time where the children were studied in relation to their family environment and their lives were followed, many of them, into adult life. In spite of the known harm of maternal overprotection many physicians have failed to impress the parents of some of their charges sufficiently with the dangers that lurk, and are so often apparent, in this business of molly-coddling. It is interesting to note in studying this book how the behavior patterns have fallen into definite classifiable groups both as regards behavior, mental achievement, social adjustment, and difficulties of attaining maturity.

While we are not in complete accord with the therapeutic approaches that are cited as being the most fundamental, nevertheless, they were the best that could be obtained under the circumstances. After reading this book we believe that mothers should be given a test before they are permitted to raise their children in order to safeguard the health and welfare of the children, just as in many states we have premarital test for syphilis before persons are permitted to marry and infect each other. This conclusion of ours may sound a bit radical and completely heartless but when we see the great damage that is done to innocent children, through the action of ignorant mothers who wreck the children's lives through overlove, we wonder if some such radical step could not be thought about. We say the foregoing *sotto voce* for we feel that otherwise the Humane Society may get after us.

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Medicolegal Notes

When Doctors Differ

In Prudential vs. Carlson, 126 F. 2d 607, it appeared that the insured under an accident policy suffered complete prostration and coronary occlusion from which he died, as the result of his automobile colliding with the guard rail of a conduit or bridge. The accident happened in Kansas. The insurance company is a New Jersey company, and the policy provided that it was not to take effect until approved by the company at its home office in New Jersey. The policy was held by the Tenth Circuit Court of Appeals, affirming the Federal District Court for Kansas, to be a New Jersey contract, and therefore governed by the law of New Jersey.

The insured's death took place within ninety days after the automobile accident. A postmortem showed that he died of "acute thrombosis, which had been present probably from a few minutes to three weeks, and in no event longer than six weeks". It also showed that deceased had arteriosclerosis which had existed for many years. The medical testimony for both parties showed that had it not been for the arteriosclerosis, the blow which the deceased received would not have caused the thrombosis which resulted in his death.

The medical experts for both parties agreed that arteriosclerosis is a natural consequence of old age. The company's experts testified that a microscopic examination of the heart showed no evidence of previous heart failure of a congestive type; that everything pointed to an "acute affair"; that but for the trauma, deceased would have lived for years notwithstanding the presence of arteriosclerosis. One of them testified on cross examination that what the trauma did was not merely to aggravate the existing condition but "just the opposite; the accident was the whole thing".

On this testimony the Circuit Court of Appeals based its affirmance of the District Court's finding for the plaintiff, and the judgment thereon that "the death of the insured was the result, directly and independently of all other causes, of bodily injuries received by him in the accident". But it also added: "True, appellant (the company) introduced the testimony of credible medical experts, which, if adopted and relied on by the court, would lead to an opposite result. But on appeal we are not the triers of the facts. We may not substitute our judgment for that of the trial court. Our inquiry is limited to an examination of the findings and judgment to see if they are sustained by substantial testimony."

What May Constitute a "Visible Contusion"

Blotches on the skin and other outward signs of sunstroke, which we found on the body of the insured, satisfied the requirement of a "visible contusion". The death of the operator of a truck delivering milk to summer resorts on a thirty mile route, at noon, with the temperature at 116° in the sun, from sunstroke as shown by large blue blotches, was judged to be by "accidental means", especially where the policy specifically mentioned drowning as within the coverage. Huss vs. Prudential Ins. Co., Connecticut Federal District Court, 37 F. Supp. 364.

Disability as Affected by Skin Grafting

Disability of twelve and a half percent of partial permanent total disability was fixed as a physiological unit where skin had to be grafted from the claimant's thigh to remove a scar on her forehead. This estimate was based on evidence as to cosmetic defects on the face, responsible to some extent for traumatic neurosis and disability to the thigh which, while not manifesting any functional loss, produced structural changes and resulted in certain symptoms of a disabling nature. Loew vs. Hahne and Co., New Jersey Workmen's Compensation Bureau, 26 Atl. 2d, 894.

Records Containing Opinion on Reported Cause of Death Excluded

Where, in an action on a life policy, to recover $10,000 payable in the event that the insured died through external, violent and accidental means, it appeared that the death certificate and a part of the medical examiner's report contained the conclusory and hearsay statements that the insured's death had resulted from "accident", and that he was "said to have fallen on the subway platform", it was held error to admit these statements in evidence over the defendant's specific objection that they contained an opinion on a matter within the province of the jury to determine. Welz vs. Commercial Travelers Mut. Acc. Assn. of America, New York Appellate Division, Second Department, 40 N. Y. S. 2d 128.

Facts for the patient inquiring about the

SAFETY

OF INTERNAL MENSTRUAL PROTECTION

Tampax menstrual tampons are more than merely *adequate* for catamenial protection...they possess a wide margin of safety, particularly on prolonged use.

Careful and extended research by authorities in different parts of the country—involving studies on bacterial flora, hydrogen ion concentration, vaginal mucosal biopsies, glycogen determinations and gross examinations in hundreds of cases—has failed to reveal any untoward results from the regular use of this form of menstrual hygiene.

For instance, one investigator[1] reports, "By exact research in 218 women who wore tampons regularly during their menstruation for one year and over, no production of irritation or discharge, vaginitis or cervicitis was found."

Another[2] states that, in 110 subjects using tampons throughout each period for a minimum of one year to a maximum of two years, "there was no evidence of any irritation of the cervix or vagina by the tampon."

A third clinician[3] (with a series of 21 subjects) writes that "no evidence was observed of any infection carried by the tampons."

Finally, the general consensus would seem to indicate that intravaginal menstrual protection will not cause blocking of the flow or cramps—rather that "tampons actually acted as a wick to draw away the blood from the cervix."[1]

Thus, Tampax can be soundly recommended to patients of menstruating age—on the basis that "the evidence is conclusive that the tampon method of menstrual hygiene is safe, comfortable and not prejudicial to health."[4]

(1) West. J. Surg., Obst. & Gyn., 51:150, 1943. (2) Am. J. Obst. & Gyn., 46:259, 1943. (3) Clin. Med. & Surg., 46:327, 1939. (4) Med. Rec., 155:316, 1942.

TAMPAX *accepted for advertising by the Journal of the American Medical Association*

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Please send me a professional supply of the three absorbencies of Tampax.

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Insulin Sensitivity

Robert C. Page and Louis Bauman (*J.A.M.A.*, March 11, 1944) present the results obtained in a series of intradermal studies on nondiabetic and diabetic patients. During an experience of seven years the authors found that globin insulin with zinc had only rarely been followed by cutaneous reactions. Bauman found that several patients who had severe skin reactions after injections of protamine zinc insulin obtained immediate relief when globin insulin with zinc was substituted. Other workers report that local reactions were not encountered when globin insulin with zinc was used.

As the question of sensitivity to insulin is of importance, Page and Bauman tested a group of ninety-one allergic and eighty-one diabetic nonallergic patients with various insulins and insulin modifiers to see if the results of cutaneous tests with uncombined protamine and globin would parallel the clinical experience with the respective insulin combinations. The solutions used were protamine; total globin (beef); native globin (beef); globin (human); insulin (beef, market); crystalline insulin; insulin (p-azobenzyltrimethylammonium chloride); insulin (p-azobenzenesulfonic acid); acid control, and zinc chloride control. They found that of the preparations tested zinc chloride, beef insulin and protamine were the most irritating. In the allergic group the reactions to protamine were twenty-four times more frequent than to globin, and in the nonallergic diabetic group the number of reactions to protamine was less, but the ratio of protamine reactions to globin reactions was more than 7.5 to 1. As a result of these studies the authors conclude that cutaneous reactions to protamine are more frequent than to globin in allergic and in nonallergic patients; diabetic patients receiving injections of protamine zinc insulin become desensitized to protamine; diabetic patients to whom globin insulin with zinc had been administered daily for about five years were not sensitive to globin.

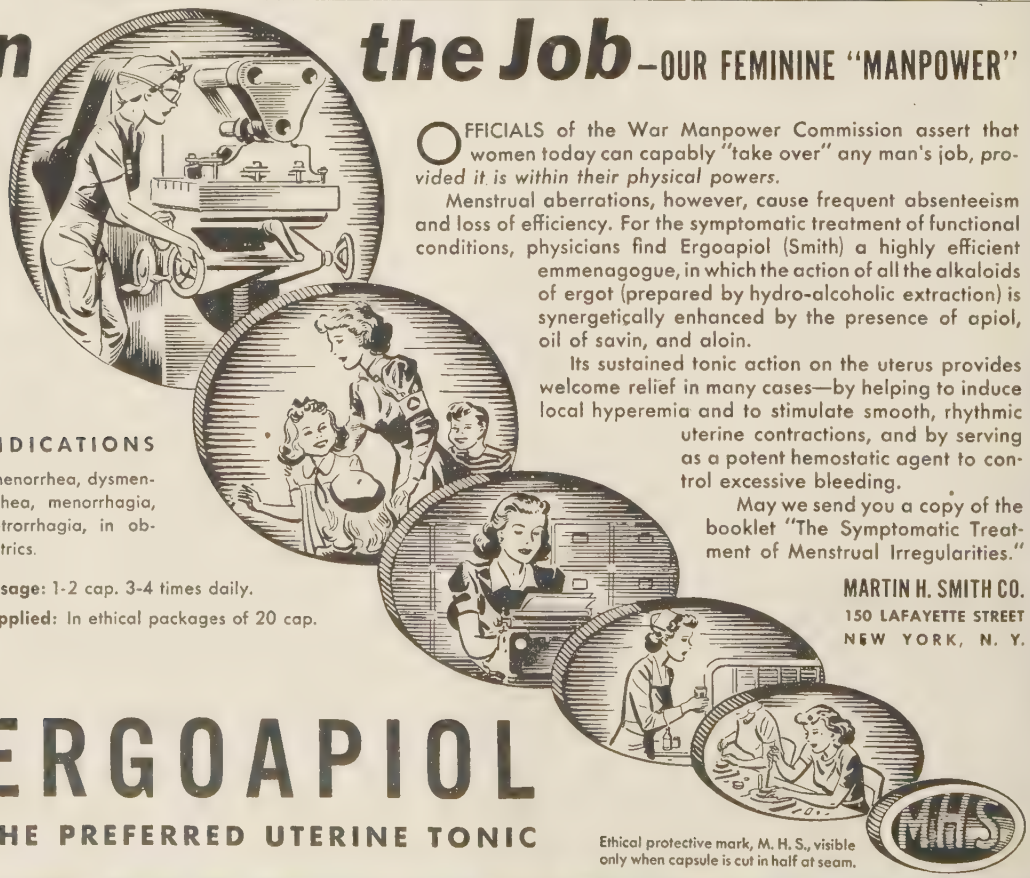
An Effective Urinary Antiseptic

Mandelamine, the chemical combination of mandelic acid and methenamine, is an effective chemotherapeutic agent in the treatment of urinary tract infections. (Pyelitis, cystitis, prostatitis, preliminary to instrumentation or surgical procedures, urinary infections attending colonic and anoproctologic diseases, urinary infections in children, and to control the infective process in renal calculosis). It is well tolerated and easily administered to adults as well as children and does not require any of the routine controls of pH, fluid intake, diet, etc., so often associated with many of the urinary antiseptics available today.

Published clinical reports affirm the effectiveness of Mandelamine. Since it does not cause irritation of the urinary tract mucosa, and since concentration of the urine is not necessary during its use, Mandelamine may be safely administered over long periods of time —although alleviation of symptoms is usually reported within three to five days.

Mandelamine is supplied in enteric coated tablets of 0.25 grams. The average dosage for adults is three or four tablets, three times daily; for children, in proportion. For descriptive literature as well as a physician's sample, write to Nepera Chemical Company, Inc., Nepera Park, Yonkers 2, New York.

On the Job—OUR FEMININE "MANPOWER"



OFFICIALS of the War Manpower Commission assert that women today can capably "take over" any man's job, *provided it is within their physical powers.*

Menstrual aberrations, however, cause frequent absenteeism and loss of efficiency. For the symptomatic treatment of functional conditions, physicians find Ergoapiol (Smith) a highly efficient emmenagogue, in which the action of all the alkaloids of ergot (prepared by hydro-alcoholic extraction) is synergetically enhanced by the presence of apiol, oil of savin, and aloin.

Its sustained tonic action on the uterus provides welcome relief in many cases—by helping to induce local hyperemia and to stimulate smooth, rhythmic uterine contractions, and by serving as a potent hemostatic agent to control excessive bleeding.

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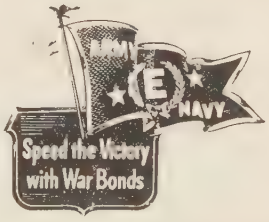

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Avoidable Dangers in Sulfa Therapy

The value of the various sulfa compounds in streptococcal and other infections has now been fully established, but at the same time it is recognized that there are certain avoidable dangers attendant on their administration. One of the greatest of these dangers is the simultaneous use of drugs containing sulphur or sulphates; even small quantities of these drugs will cause untoward effects. Most saline laxatives contain one or more mineral sulphates and in most instances are combined with sugar to disguise the taste. Eno Effervescent Saline, being free from sulphates or sulphur in any form and containing no sugar, is therefore a satisfactory laxative in sulfa therapy.

The medical research department of J. C. Eno, Inc., Bloomfield, N. J., has prepared a brochure describing in detail the value of this time-tested laxative in various conditions. The laxative action of Eno is described as being dependent on the physiological principle of osmotic diffusion and thus easy and full evacuation of the bowel is accomplished without irritation of the intestinal nerve endings. It is also a mild and effective antacid and a mild diuretic and therefore valuable in the prevention of hematuria which often occurs during sulfa therapy and aids diuresis by stimulating the renal function. It does not interfere with the passage of chyme through the small intestines and has no disintegrating effect on the intestinal mucosa. In minor cases of hyperchlorhydria Eno has been found to be a useful corrective, and as it has no sugar content it can be prescribed with safety to diabetic patients.

Copies of this brochure with a sample of Eno Effervescent Saline may be obtained by writing the medical research department of J. C. Eno, Inc., Bloomfield, N.J.

Shock Therapy

Clarence A. Neymann (*Arch. Phys. Ther.*, Nov. 1943) reports on several hundred psychopathic patients treated by electric shock therapy. He found that daily treatment led to confusion which was beneficial. Patients who were given subconvulsive shocks and those treated only till they seemed to have recovered from their psychosis without apparent confusion, either reverted to their former sick state of mind, or were not benefitted at all. To overcome this all patients were treated until they had become completely disoriented for time, place and person. The confused period lasted for about two weeks and was followed by a more or less permanent retrograde amnesia. On "waking up" all except those whose deterioration was of long standing were apparently cured, at least for the moment.

Neymann checked on former patients who had recovered after receiving metrazol or insulin injection and found that the same amnesic state had been experienced. In his opinion the psychic rest from internal conflicts and obliteration of memories causing the psychic disintegration may be the chief reason for recovery. This was especially true for manic-depressive cases which were greatly helped by electric shock therapy. Schizophrenic patients thus treated showed a higher record of recovery than in spontaneous recoveries, but no such startling rate. He feels this difference is the product of the psychological structure of the two diseases. A depression is self-limiting because the pa

(*Continued on page* 438)

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tient retains his interest in the outside world. Forgetting the cause of his distress helps his extroverti mechanisms to regain touch with reality. He remain cured until conflicts and tensions again gain the upp hand. Psychotherapeutic treatment after shock thera increases the recovery rate in these cases. Schizophre ics, on the other hand, with their ingoing interests, ha no basic psychic mechanism to encourage them to ke in touch with reality, although in early schizophren individualized psychotherapy following electric sho treatment bridges psychic difficulties in many cases a produces hopeful results.

Neymann believes that most neurotic patients a harmed by shock therapy since it only disturbs the and may produce a permanent fear of dementia becau of acute awareness of lapse of memory.

He emphasizes that electric shock therapy shou only be used by a skilled psychiatrist. Moreover t type of psychosis to be treated must be carefully sele ed. He warns that a temporary brilliant result mea nothing in dealing with essentially chronic mental di eases and feels that true evaluation of electric sho therapy will take at least another ten years of stud The therapy, however, seems to have great value in t right hands.

New Transparent Bacteriostatic Film

Allantomide Film, a new protective, pliable, tran parent film for minor wounds and burns and derm lesions of staphylococcal origin, has been announc by the National Drug Company, Philadelphia. Alla tomide Film, a product of the company's Researc Laboratories, contains sulfathiazole sodium, polyvin alcohol, allantoin, and chlorothymol. The bacteri static action of sulfathiazole sodium allays furth advance of the infection, and the allantoin serves as stimulant to healing. The Film is recommended f covering abrasions, minor surface wounds and sl healing sores. It is being used to treat staphylococc infection of impetigo and other infections susceptib to sulfathiazole therapy.

Allantomide Film is applied as a jelly and for upon drying a tough, pliable, protective film which transparent, thus enabling the physician to obser the progress of healing without the necessity of fr quent redressings. The Film may be readily washe off when desired, as it is water-soluble.

Egotism is the anesthetic which nature gives us deaden the pain of being a fool.

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ALLANTOMIDE FILM, containing sulfathiazole sodium, provides bacteriostatic action plus the tissue-stimulating aid of allantoin. It is applied as a jelly. When dry, it forms a tough, pliable, transparent film which protects minor wounds and burns, hard-to-heal external ulcers or dermal lesions of staphylococcal origin. Although frequent redressing is obviated by its transparency, it is water-soluble and may be readily washed off.

The active ingredients are sodium sulfathiazole (5%), allantoin (0.4%), polyvinyl alcohol (5%), and chlorothymol (0.075%). Thus bacteriostasis is provided plus the cell-proliferating aid of allantoin. The pH is adjusted so that irritation is avoided.

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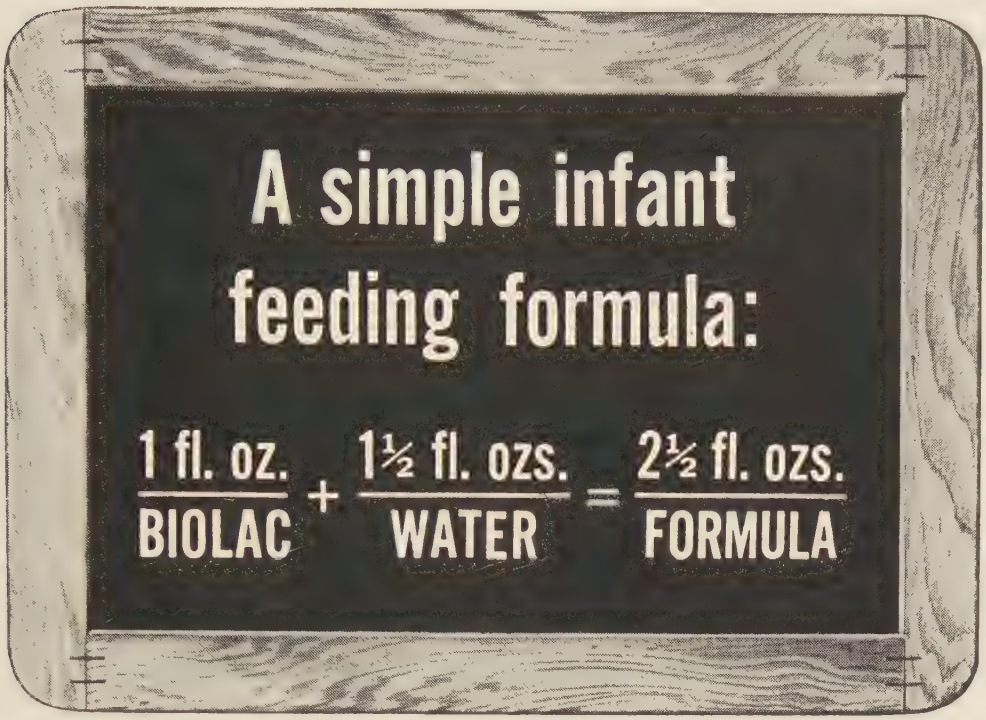

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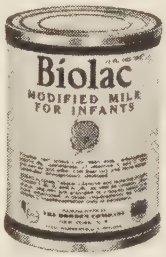

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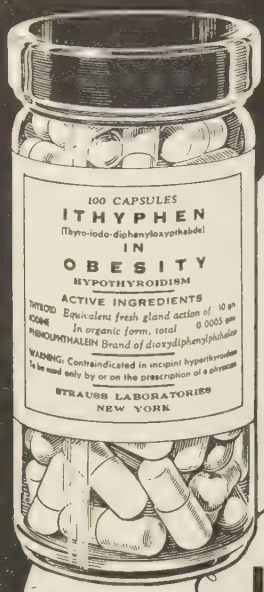

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Ergotamine Tartrate in Psychopathologica Conditions

The War Shipping Administration announces th according to Dr. John K. Fuller, medical direct ergotamine tartrate is proving a valuable aid in t treatment of merchant seamen with psychopathologi symptoms resulting from exposure to war hazar Studies on the usefulness of ergotamine tartrate treating physical reactions to convoy fatigue have be under way for some time in rest cen'ers of the W Shipping Administration and the United Seame Service. Dr. Robert G. Heath, former resident at t New York Neurological Institute, and now chief me cal officer at the rest center at Sands Point, N.Y., h supervised the studies being made in the use of t drug in treating physical manifestations of psyc trauma. Dr. Daniel Blain, deputy medical director the War Shipping Administration, is in charge of various rest centers where work with the drug is bei carried on.

If ergotamine tartrate continues to meet expec tions, it will be made available to merchant sh carrying qualified medical personnel. While ergot a its derivatives have been used for many years in t treatment of migraine headaches and in controlli hemorrhage following childbirth, it is only rece that it has been used for the treatment of men trauma. It is expected that the use of ergotan tartrate will be permitted only by direction of co petent medical personnel, and the medical authorit of the War Shipping Administration said they belie its usefulness might be extended to treating sho victims of catastrophes, such as fires and tornadoes.

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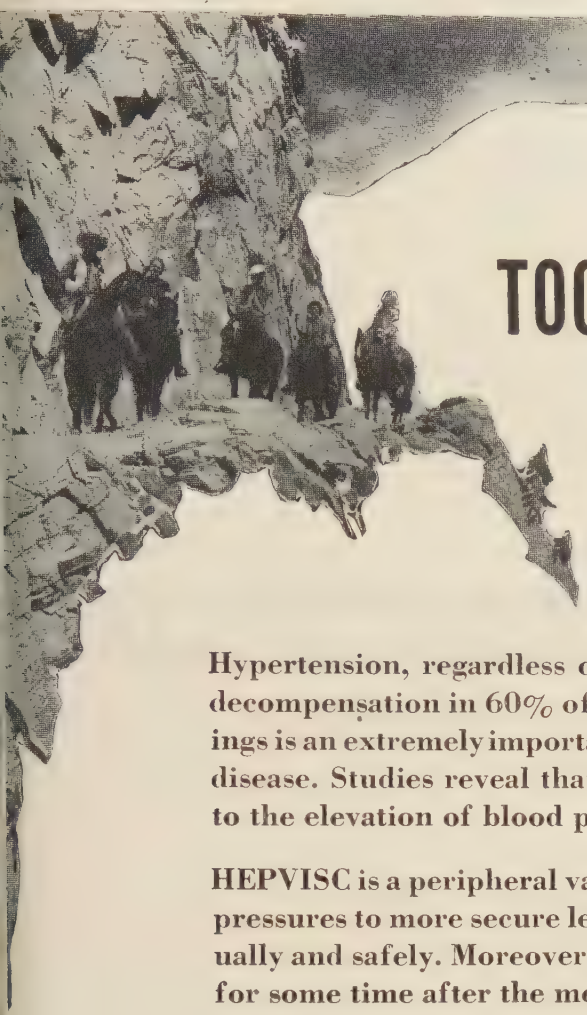

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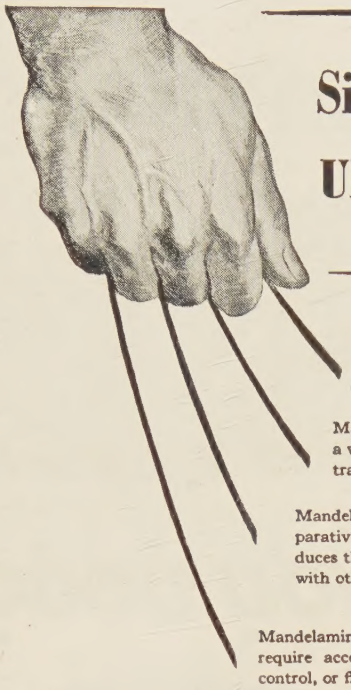
Wartime Population Growth

Contrasting trends in wartime pulation increase are shown in a iew of the crude rate of natural crease in twenty countries during e decade 1933 to 1942 (*Statistical lletin,* Metropolitan Life Insurce Company, April 1944).

In Germany, the natural increase s been declining since the war be- n, the decline becoming more rked each year. Italy likewise has perienced a sharp drop in the rate natural increase. In Hungary the e declined slightly, and available ta for Rumania show a steady de- ease in population growth. The rate Bulgaria rose slightly, but the 1942 ure was below the prewar level. Figures for the occupied countries dicate that in Denmark there was a nsiderable natural increase through 42, and in the Netherlands there s a falling off at first, but in 1943 e rate rose to the 1942 level. Bel- um and France face serious depopu- ion.

The Allied countries present a dif- ent picture. In the United States e crude rate of natural increase has en since the beginning of the sec- d World War to the highest figure two decades, and in Canada the e has shown a definite increase. England, the excess of births over aths in 1943 was the highest in een years, and in New Zealand, otland, Australia and Northern land, the population growth was ater in 1942 than in 1939. No ac- rate vital statistics for Russia and ina are available.

The survey showed that some of e sharpest increases in population ring the decade 1933-1942 oc- red in neutral countries. In Swe- n the excess of the birth rate over e death rate doubled during this iod and in Switzerland it more n doubled.



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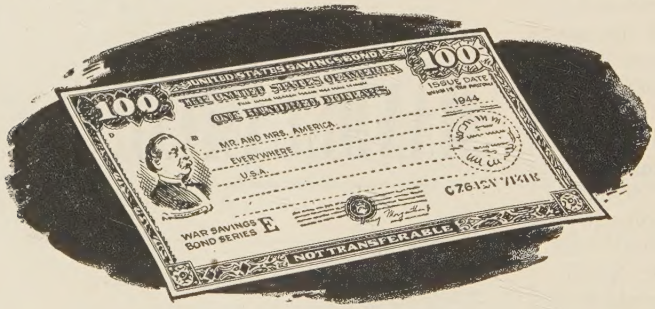

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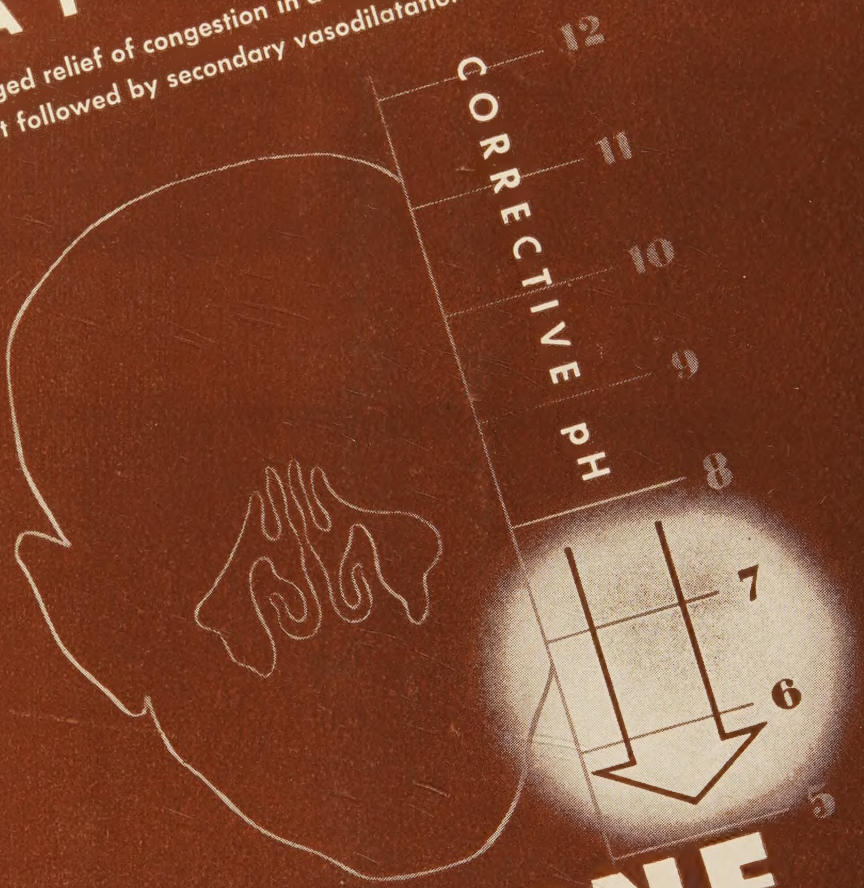

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